This Week in Metalworking

STEEL

Vol. 131 No. 7 Aug. 18, 1952

√NEWS √PRODUCTION-ENGINEERING √MARKETS

Metalworking Outlook 57

As the Editor Views the News 61

Windows of Washington 72
Editor E. C. Kruetzberg reports matters of vital interest to the metalworking industry coming out of Washington

Mirrors of Motordom 79

The Business Trend 83
Now that the strike is over, business is picking up. STEEL's Industrial Production Index plots the trend

Men of Industry 87

Production-Engineering News at a Glance 93

Controls Ease Precision Tube Problems 94
Cold drawing, derodding and annealing of stainless tubing all call for close control

Photographs Sell Safety Program 96
On-the-spot picture of the accident or unsafe practice is better than any discussion or lecture

Machinability: Theory Pays Off 98
Answers to the toughest machining problems often lie within the basic principles of metalcutting

Progress in Steelmaking 108
Philippine Plant Makes First Steel—They use war surplus scrap for raw material

New Products and Equipment 135

The Market Outlook 153
Metal Prices and Composites start on Page 154

The Metal Market 165

Behind the Scenes	6	Obituaries	90
Letters to the Editors	10	Calendar of Meetings	130
Subcontract Summary	70	Helpful Literature	149
Checklist on Controls	71	Here, There in Metalworking	175

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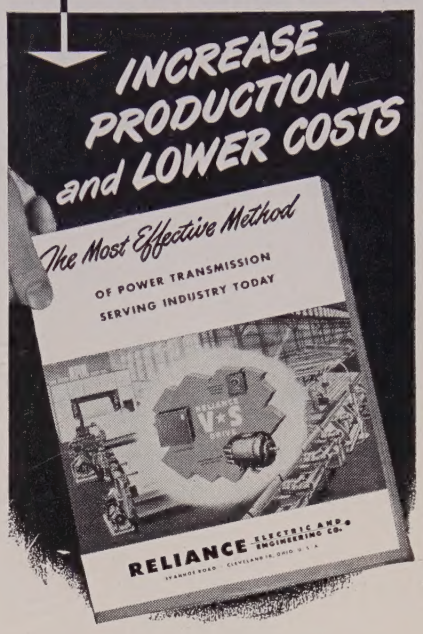
Here's New Data

ON INDUSTRY'S PROVEN WAY TO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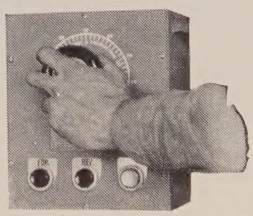

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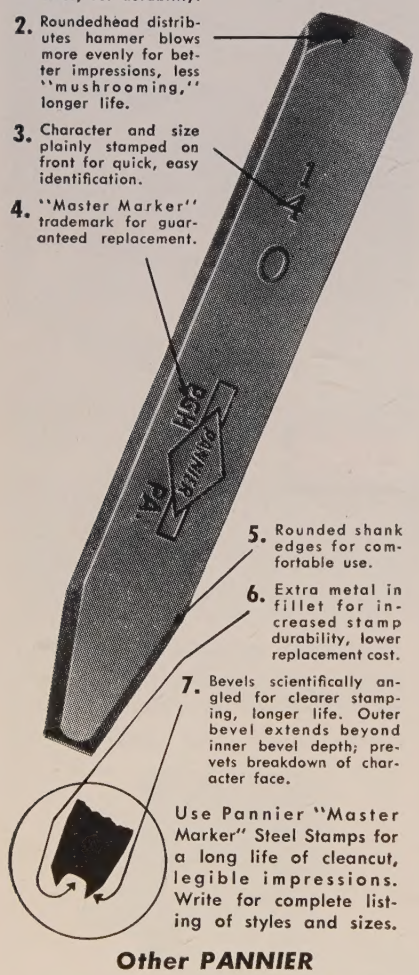

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Behind the Scenes...

Matter of Masthead

STEEL'S masthead has just undergone a facelifting. It now will occupy two-thirds of a page. Location will be a left-hand page immediately preceeding The Metalworking Outlook.

Welcome additions are the names of Nancy Shaffer and Liz Keating. Besides doing a lot of work these two girls with their handsome faces help keep the editors from going stark raving mad on deadline day.

Another change is the new title of Assistant Managing Editor. Vance Bell and John Morgan will serve in this capacity.

Coverage

We were looking through a booklet the other day put out by the Chrysler Corp. in commemoration of the unveiling of the Patton 48 tank at its Newark, Del., plant.

In it is a recital of the journalistic coverage devoted to the tank. Our researches reveal that only two magazines devoted space to a picture of the tank—STEEL and *Time*. Howard Tuttle, our Detroit man, covered the story, but he got his information at Livonia, Mich. Chrysler and Ford both have contracts to build the vehicle, and the tank was also unveiled on the same day at Ford's plant in Michigan. Howard was on hand and the first of the day's guests to ride in the thing. His tan summer suit still has a white paint stain acquired inside the tank, to prove that he was aboard.

On Guard

Trenchermen: Get in training now. Next week is National Cherry Pie Week and we expect every man—and woman—to do his duty. A good goal: Eat at least one piece of cherry pie each week day and two on Saturday and Sunday.

New Job

Walt Campbell, our managing editor, has just become a member of the Atomic Energy Advisory Committee on Technological Information. The purpose of that committee is to study the data and descriptions of developments in atomic energy that have been or will be written. The committee will make recommendations on what it thinks is declassifiable and available to American industry.

Affliction

The Air Pollution and Smoke Prevention Association of America has changed its name because of hyperonomatomekia. We don't blame it. Just to pronounce hyperonomatomekia is a trial, let alone to be afflicted with it. The new name is Air Pollution Control Association. Executive Secretary Robert T. Grieblin says, "I couldn't write the name on hotel registers because it was too long. I compromised by signing 'Mellon Institute' where our offices are located and because I am a Fellow there."

Hyperonomatomekia is plain Greek for plain English, "unusually long name."

Cover Story

This week's cover story was written by Asst. Managing Editor John Morgan. It's a hot one as John well knows. On the first of this month he and UP photographer Frank Reed went out to the rivet plant for pictures and the story.

The day was one of the season's hottest with temperature in the high 90's and a rivet plant is no deepfreeze. John says that in spite of complete co-operation from all concerned, he really sweat on this one.

Puzzle Corner

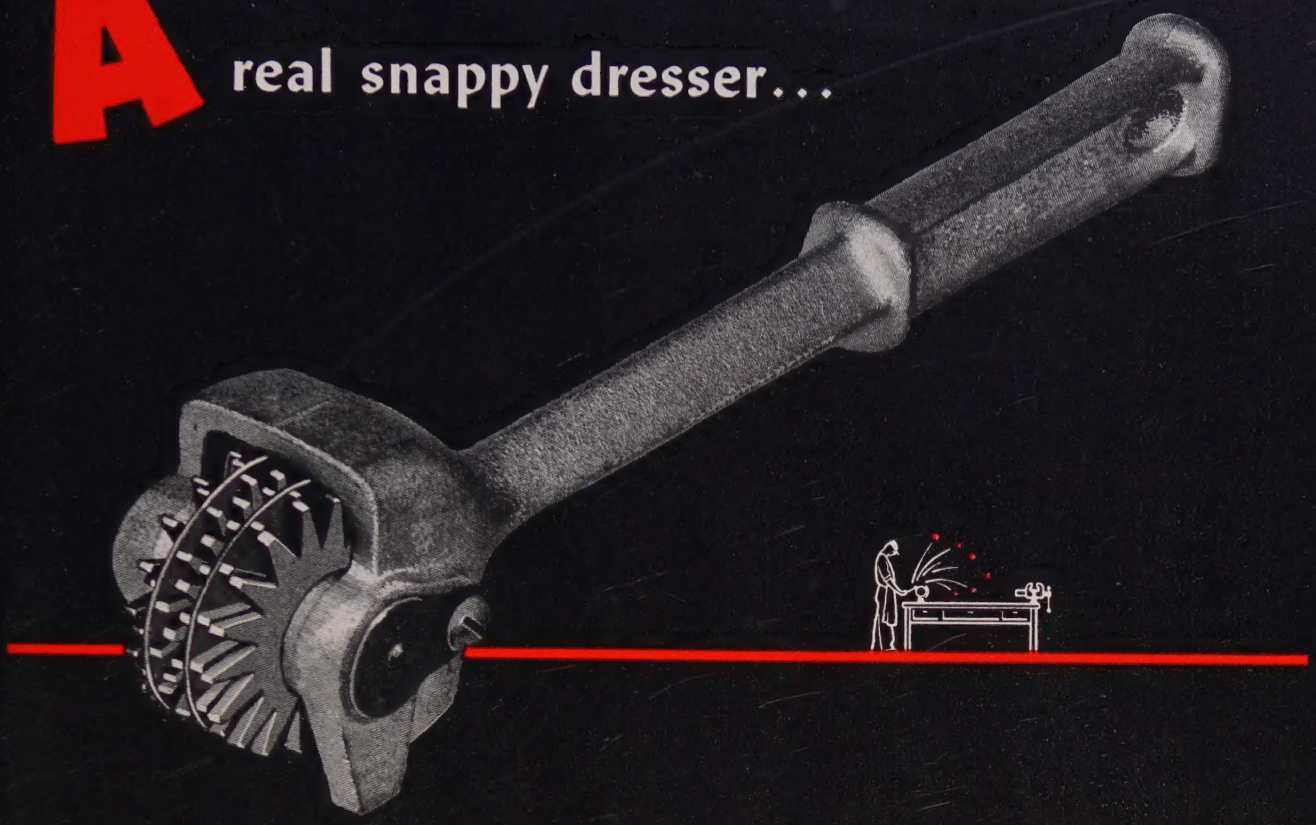
In the puzzle of Aug. 4, Dick's father is Peter. First in with the answer were George W. Frederick of Republic Steel Corp., Guy F. Verne of Truckstell Mfg. Co., Charles L. Luhn of Joseph Honhorst Co. and Harry R. Rupp of Service Iron & Steel Co.

Try this one for size: A king ordered a crown weighing 60 ounces to be made of gold, brass, tin and wrought iron. The gold and brass together formed two-thirds, the gold and tin together three-fourths and the gold and iron three-fifths. How much of each material did the crown contain?

Shrdlu

(Metalworking Outlook—Page 57)

A real snappy dresser...



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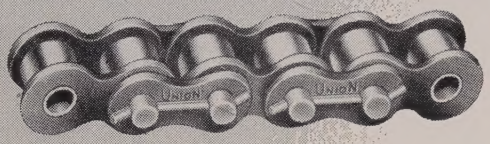
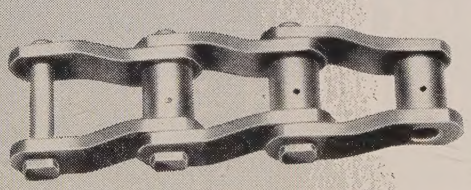


UNION ROLLER CHAIN

UNION SILENT CHAIN



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Union Chain manufactures nothing but steel sprocket chains, sprockets and attachments. Not only that—Union Chain is the only manufacturer producing every type of steel sprocket chain *exclusively*. Such specialization is the reason Union Chain consistently produces chain of the finest quality for every possible application.

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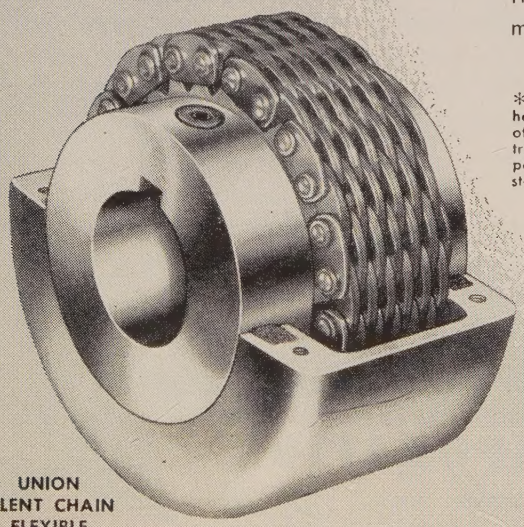
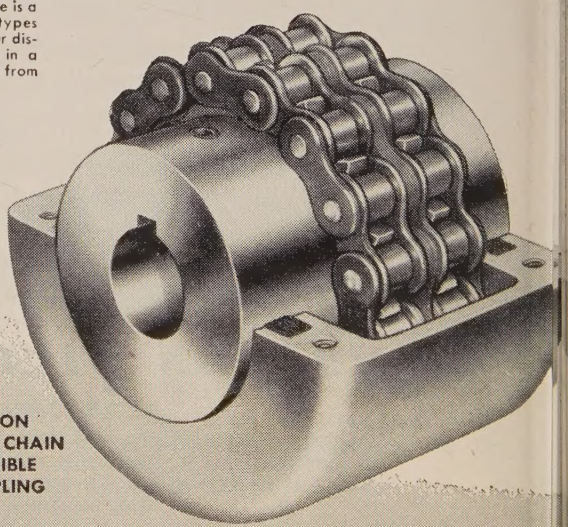


UNION SILENT CHAIN FLEXIBLE COUPLING



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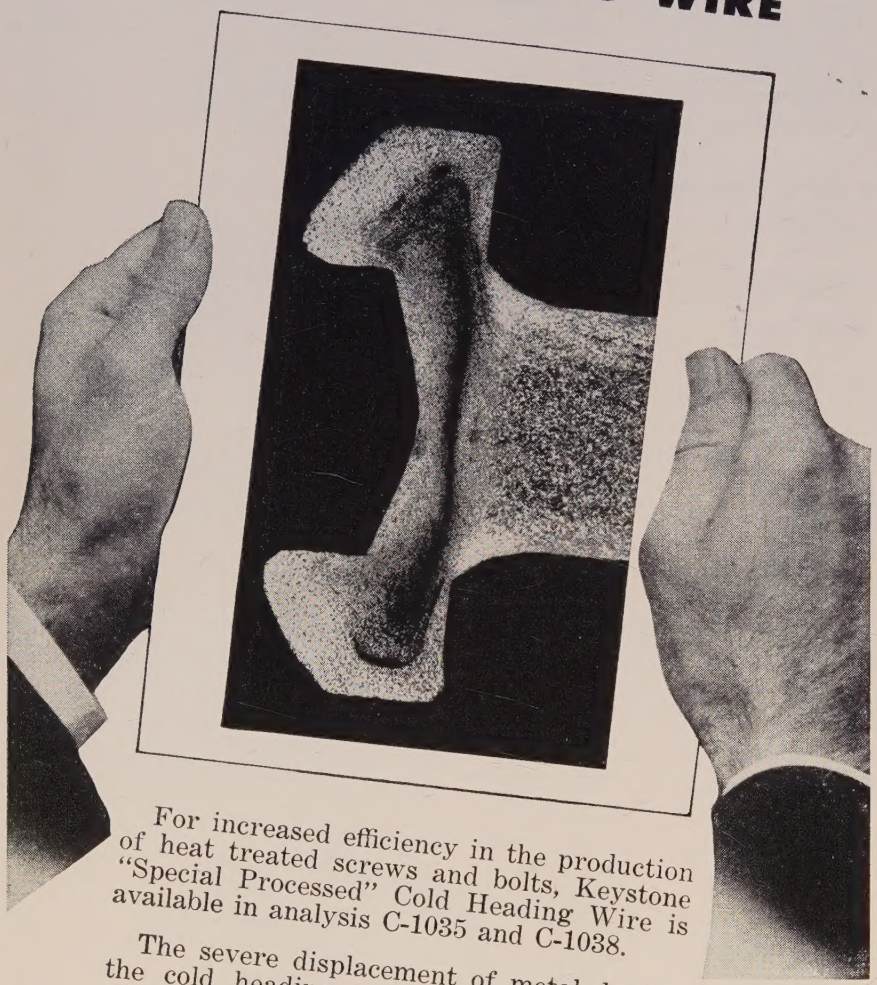

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LETTERS

TO THE EDITORS

Dogeared Pages Mean Readers

Our issue of STEEL for June 16, containing the special report "Guide to Selection of Tool Steels and Carbides" has been considerably abused in being passed from hand to hand to the various interested individuals in this plant. It would be appreciated if you could furnish us with three sets of tear sheets of the above subject if it is at all possible.

W. E. Anderson
purchasing agent
Sheffield Steel Corp.
Sand Springs, Okla.

• *Reprints sent.*

Size Multiplies Problems

We are a small plant, one of many in the U. S., and do a great amount of buying in small quantities of a great variety of materials, both finished and rough.

Since our purchases are usually made in small quantities, it is not expeditious for us to spend time and money searching for the best possible source. What we could use to great advantage is a "Sears Roebuck" catalog for the industrial consumer. Not just a list of suppliers but a catalog of information which would include prices.

We do appreciate the forecasts and the reviews of technical advancements in brief form as presented in STEEL. Full page articles are fine even though they don't use up all of the available space on that page.

C. E. Freese
chief engineer
Pelton & Crane Co.
Detroit

Wide-Awake and Heads-Up

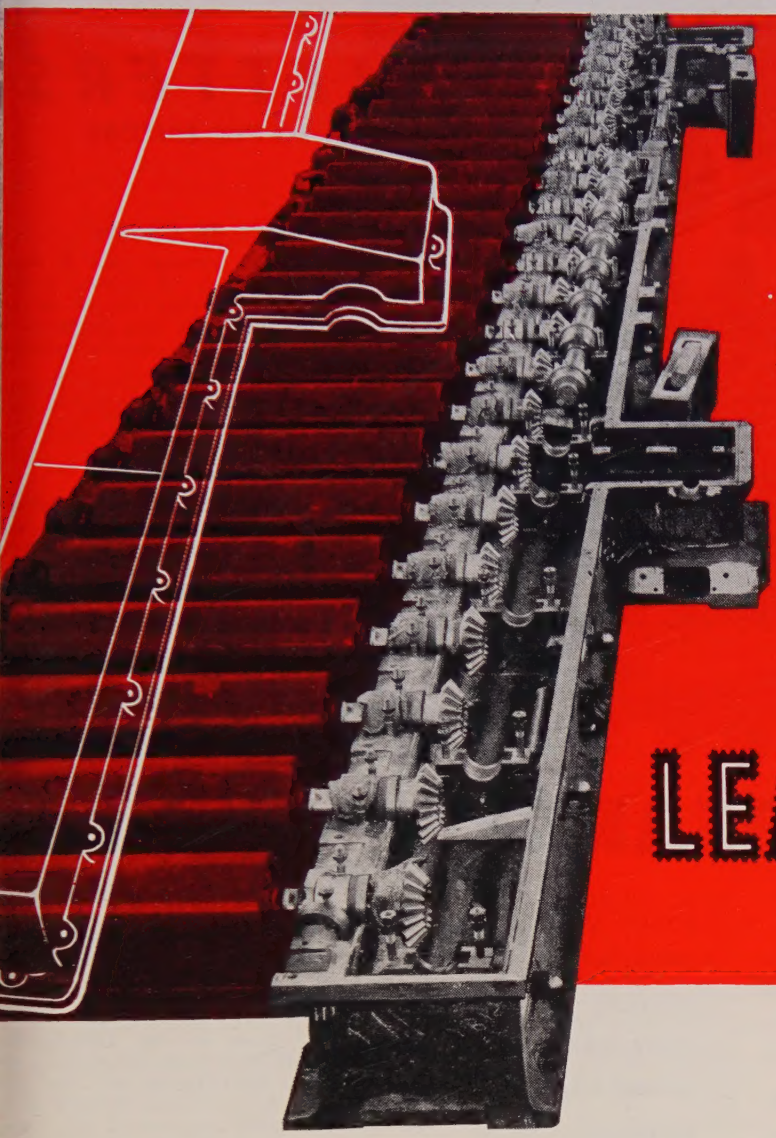
I would like to comment that the application of structural steels in the field is not a regularly appearing item within the pages of STEEL. I realize that the publication is devoted primarily to steel as a material and not to steel in its various finished applications. However, it has always seemed to me to be the natural outlet for unusual structural applications of steel as well as unusual mechanical applications. In other words a great deal of space is given to heat treating, welding, forming, material handling and the like, but the structural fabricators who form a good part of your readers, seldom have an article directed toward their interests. I, for one, would appreciate more such articles.

I do want to congratulate you for your wide-awake, heads-up attitude so far as coverage of current business conditions is concerned.

Elmer E. Gunnell
American Institute of Steel Construction Inc.
New York

• *Your suggestion about covering unusual structural applications is a good one. We'll follow through.*

(*More letters on p.* 12)



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For reduction gear sets . . . mill table gear drives . . . or any other enclosed gear application—you will profit by standardizing on Brooks LEADOLENE as your lubricant.

WRITE for the 20-page brochure, "The Brooks Oil Story". . . or for consultation by a Brooks Engineer.

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pH-ilm Strength . . . 30,000 psi minimum.

Adhesiveness . . . Affinity for metal develops maximum adhesion providing permanent coating on gears.

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Gears made only by PITTSBURGH GEAR from an exclusive formula perfected by Pittsburgh engineers which covers metal, machining, and a method of heat-treating that hardens the wearing surfaces but leaves the core tough and shock-resistant.

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Longer gear life and fewer work stoppages. Pittsburgh **ARMORED GEARS** are guaranteed to give you five times the life of untreated gears, one to one and one-half times the life of oil-treated gears, and equal or longer life than any other gear in identical service.

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Try a Pittsburgh **ARMORED GEAR.** Then standardize on these guaranteed gears for continued savings. Send your specifications to us today for quotation on one or any quantity of gears you need. We'll give you prompt service.

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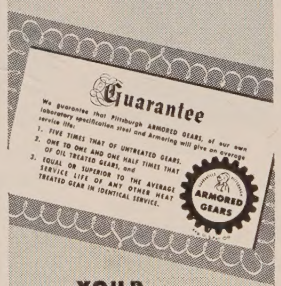

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LETTERS
TO THE EDITORS

Good Where It Counts

You can rest assured that I enjo reading every copy of STEEL. I fee as well as many other people in ou organization feel, that this magazine i the most interesting in the metalwork ing field.

K. E. Grot
purchasing age
Stolper Steel Products Cor
Menomonee Falls, Wi

Taft-Hartley Set Aside

It is my judgment that you have under emphasized the importance of the stee workers vote on whether or not the would return to work (July 28, p. 47 because of its implications to the Taf Hartley Act.

Neither the Democratic nor Republi an platform makes a clear challenge the Taft-Hartley Act. In my opinion, should be one of the major issues in t coming campaign. If the poll of t steelworkers, as reported in your pape reflected their disposition to return work under circumstances identical those laid down in the Taft-Hartl Act, it seems that in an election on t merit of the Taft-Hartley Act, the vo would be overwhelmingly in favor of

The industrial progress of this cou try cannot endure if management is ha assed continuously by strikes and t prospect of carpetbag investigators u der a F.E.P.C. law.

Ray Wa
presid
Illinois Water Treatment
Rockford,

Space Saver Article Picked

The article "Motorized Line Spee Manifold Assembly" (June 16, p. 14 is very interesting and we would l to reprint story in our publication.

R. G. Swisher, ed
Hobart Arc Welding N
Troy,

• *Granted.*

Powerful Editorial

We believe that the editorial "T Much Power" (July 28, p. 43) is cellent. If reprints are available, would like to have about ten copies

M. G. Hende
Youngstown Sheet & Tube
Bo

• *They're on the way.*

Price Pass-Through Needed

This plant is probably one of smallest of the readers of STEEL, we follow it carefully and feel that could not be without the magazine.

I see nothing in the newspapers indicate that the $5.20 per ton incre

(*Continued on p. 71*)

The Metalworking Outlook

August 18, 1952

Steel Prices

Odds are that all steel companies won't raise all their product prices to the new limits set by OPS (p. 65). Competitive conditions will dictate that some firms keep quotations below the rise permitted—perhaps at Capehart levels. On at least one specialty steel product, the price will be lowered. Stran-Steel Division of Great Lakes Steel Corp. reduced its price of all-steel quonset buildings from 7 to 16 per cent, the average being about 10 per cent. The cut was made possible by greater efficiencies due to increased volume.

Louder: Decontrol Talk

Decontrol talk is getting louder despite effects of the steel strike. Copper supply and demand are virtually in balance. Aluminum shortages aren't serious. Optimism is mounting about steel. Washington planners say they can't do more than talk about decontrol for a while because they still aren't certain of what military requirements will be for the next six to eight months.

More Autos in 1953?

An indication of the way thinking is now going is the treatment automakers are getting. NPA hasn't committed itself firmly, but auto and truck builders probably will get their wish for a production ceiling of 1,250,000 cars and 300,000 trucks in the first quarter, 1953. Truck manufacturers are to be given enough aluminum and copper to build 285,000 trucks in the fourth quarter, while steel tickets will be held to 80 per cent of requirements. The additional steel would have to come from foreign or conversion sources.

Busy with Expansion Ideas

Despite the optimism about steel, federal agency men are still busy trying to find steel expansion programs. They claim that holes in the general expansion must still be plugged. An increase in plate capacity will probably be pushed at the next Steel Products Industry Advisory Committee meeting with NPA. Extremists in Washington are even talking about government construction of additional facilities if the industry men refuse to go along.

Slow Work

Two big steel companies and the union are still engaged in the time-consuming job of rewriting their full labor pacts. A major stumbling block to speedy settlement is the time and motion study phase of the contracts. In that are some tricky points about management rights and union obligations.

Scant Success

A little-publicized drive by United Steelworkers of America-CIO to move in on sailors of Great Lakes ore carriers is making scant headway. USA got nowhere with 347 unlicensed personnel of M. A.

Production-Engineering News—p. 93 The Market Outlook—p. 153

Hanna Co. now represented by the independent Lake Sailors Union in a move to get NLRB to call an election. Failure also met the union's efforts for an election among seamen of the Wilson Transit Co. fleet.

Nearly Stopped

The program to place more defense contracts in labor-surplus areas is limping to a virtual halt—as a result of widespread criticism of the policy as leading to unfair discrimination and political shenanigans. Manufacturers in "distressed employment" areas, who took advantage of provisions permitting them to match low bids elsewhere, got only 3 per cent of all the contracts the U.S. awarded during April, May and June. The percentage promises to be even lower from now on because the number of areas designated in distress is also dropping—now at 46.

Stockpiles for Scarce Goods

The stockpile technique used to get reserve supplies of many of the nonferrous metals may be tried on scarce components and special items like gages. A list of things in shortest supply is being compiled in Washington now. Makers of those products will be approached on expanding their capacities with the help of fast amortization and any other aids available. If that isn't enough to persuade manufacturers to expand, DPA may go to Congress for additional help.

Straws in the Wind

John L. Lewis' new wage demands for the United Mine Workers spiked government plans to remove price controls from the bituminous coal industry . . . OPS has given the hard coal industry a 75-cent-a-ton ceiling boost on small sizes sold mainly to industrial users . . . Telford Taylor, chief of the Small Defense Plants Administration, hopes to quit by Sept. 10 . . . New England loses a steel industry by default through expiration of DPA's fast tax write-off for $228 million of steelmaking facilities to have been built in Connecticut . . . Motorola Inc. cut prices on about 11 per cent of its 1953 television line . . . Kaiser-Frazer Stockholders Protective Committee is agitating for a major shakeup in management and policy after Kaiser-Frazer Corp. reported a $6,032,837 loss for the first six months of 1952.

What Industry Is Doing

You will probably be allowed to boost prices of manufactured metal goods to reflect about 80 per cent of higher costs (p. 65) . . . Tool and die shops are still in the production woods, but new orders and backlogs are leveling somewhat (p. 67) . . . Major railroads plan to step up purchases of freight cars and locomotives this fall (p. 68) . . . The spray gun is becoming a good cost-cutting weapon (p. 69) . . . Mobilization agencies are simmering over expected changes (p. 70) . . . Executives in small and medium-sized companies will have to fight for their rights in this controlled economy, says T. Pierre Champion, Champion Rivet Co., Cleveland (p. 75) . . . Alcan's expansion progresses (p. 76).

UNITED

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Milled studs are carried in stock from ¼″ x 1″ to as large as 1¼″ x 12″. Special milled studs are made to the most exacting specifications and in any desired quantities.

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So Good → they're often forgotten

Nickel Alloyed Worms and Gears Still Serve after 30 Years of Operation

A nickel bronze gear, teamed with a nickel alloy steel worm, gives you gearing that actually improves with use.

Many years ago, after considerable laboratory and actual field tests of various compositions The Cleveland Worm and Gear Company . . . specializing for the past 40 years in the production of speed reducers . . . standardized on nickel-tin bronze gears.

Today, many of their drive units which were produced in the early days, are still operating regularly with the original worms and gears . . . which means more than 30 years of useful service.

The reason for this long, trouble-free performance is not hard to find. For nickel improves the strength of standard bronzes and is particularly effective in raising elastic properties . . . increasing shock resistance as much as 25 to 50 percent.

Nickel-containing alloys may meet the exacting demands of your particular equipment or production problems. Write us, today, for counsel and data.

At the present time, the bulk of the nickel produced is being diverted to defense. Through application to the appropriate authorities, nickel is obtainable for the production of nickel alloys and bronzes for many end uses in defense and defense supporting industries.

NICKEL-TIN BRONZE . . . containing approximately 1½% nickel, 10½% tin, a maximum of 0.25% lead, the balance copper . . . is produced by several foundries for gear requirements of The Cleveland Worm and Gear Company of Cleveland 4, Ohio.

This company also uses Type 2317 (3½% nickel) carburizing steel for worms of large size, and Type 4615 (nickel-molybdenum) carburizing steel for the smaller sizes. Both of these steels are especially easy to handle in heat treatment, and consistently provide the hard surface and tough core so essential to efficient, long-lasting operation. Moreover, they withstand reasonably rapid grinding on automatic thread grinders without surface cracking or spalling.

EMBLEM OF INCO SERVICE TRADE MARK

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N.Y.

Join This Crusade!

At his press conference on Aug. 7 President Truman read a statement on the poor showing made by American voters in recent elections. He pointed out that only 51 per cent of citizens eligible to vote in the Presidential election of 1948 went to the polls. In 1900, when our fathers and grandfathers were voting, 73 per cent of the eligibles cast ballots. In 1880, when our grandfathers and great-grandfathers were voting, 78 per cent went to the voting booths. Obviously our ancestors valued the voting privilege more than we do.

Voting records of foreign citizens put ours to shame. In recent elections 90 per cent of the people entitled to vote cast ballots in Belgium, 89 per cent in Italy, 83 per cent in Great Britain, 80 per cent in Sweden, 75 per cent in France and in Canada, and 71 per cent in Japan. Mr. Truman added that more than 29 million adult Americans were not even registered as of last Jan. 1.

Such apathy is appalling. The President deserves credit for placing emphasis upon it now, when we are approaching campaigns for the November elections and while there still is time to work on citizens who are not registered.

His emphasis should lend encouragement to the scores of national and local organizations which already are active in a tremendous get-out-the-vote campaign. Fortunately there are heartening signs that their efforts are yielding results. In a few localities where intensive work has been done, 95 per cent or more of citizens entitled to vote are registered.

However, localities boasting such fine achievements are few and far between. There are far more where registration is only 40 to 50 per cent of the potential. Making sure that the drive for higher registration is pushed vigorously and evenly throughout the country is a job in which every industrial company can participate. Contact your local get-out-the-vote organization and co-operate with it wholeheartedly!

The election of Nov. 4 is the most important in our lifetime. Balloting by less than 70 per cent of eligibles will be a national disgrace.

E. C. Shaw

EDITOR-IN-CHIEF

OUR "FLYING SAUCERS": We are indebted to the "Industrial Bulletin" of Arthur D. Little Inc., Cambridge, Mass., for a bit of timely information on the status of man's hopes to conquer space. The fact that a number of respected rocket engineers are agreed that the development of a space ship which would travel regularly in a fixed orbit around the

earth is both "desirable and possible" may bolster the ego of amateurs who speculate that flying saucers are visiting ships from another planet.

Dr. Wernher von Braun, a leader in development of the German V-2 rocket and now with U. S. Army Ordnance, has plans for a manned satellite space station to circle the earth every two hours at an altitude of 1075 miles. It would cost $4 billion and take ten years to build. James H. Wyld, rocket engine designer, envisons a "Model T" space ship designed to circle the earth at 200 miles altitude.

A cue to the metalworking industries is that the realization of either project depends in a large extent upon "considerable advances in light-weight structural materials to withstand extremes of temperature and pressure."

* * *

SEE BRISK RR BUYING: Purchases of freight cars and locomotives by railroads should be substantial this fall and early next year. Originally Defense Production Administration and Defense Transport Agency set a goal of 2,167,653 freight cars and 28,086 diesel-electric locomotives to be in use on July 1, 1954. Because of the steel strike the deadline has been moved into September of 1954.

To meet this schedule (p. 68) will require construction of freight cars at a higher rate than in the recent past. From Jan. 1 to July 1, 1952, car output averaged 7476 per month. It should be increased to from 8000 to 10,700 monthly, depending upon how rapidly over-age cars are retired. Little difficulty is expected in meeting the locomotive schedule. Rail purchases will increase sharply when steel becomes available.

* * *

WHY POWER IS KING: Last week representatives of the U. S. and Canadian press were guests of the Aluminum Co. of Canada at ceremonies attending the placing in operation of the first of two hydroelectric units constructed by the company on the Peribonka river, 120 miles north of Quebec. Development of such substantial facilities in this remote area (p. 76) reflects the unique economies of aluminum production.

Power alone accounts for nearly 20 per cent of the cost of producing the light metal. About 10 kilowatts of electricity are required to produce a pound of aluminum. An increase of only one mill in the cost of a kilowatt hour increases the cost of aluminum by a cent a pound or $20 a ton. That is why inexpensive power in northern Quebec takes precedence over such factors as availability of raw materials, accessibility of markets and transportation.

* * *

WHY OF GOBBLEDEGOOK: A distraught military procurement official offers a convincing explanation of the gobbledegook language which clutters up so many of the government's contracts. Pointing to a 24-page invitation to bid on certain contract he said (p. 72): "We could state what we have to say in less than one page—what we want, when and where we want it, and the specification references. The other 23 pages contain clauses called for by law and administrative orders."

What he means is that Congress passes laws which say that the procurement officers must favor small business, must take into account the dispersal of industry, must favor firms in distressed areas, must buy so as to preserve critical supplies, etc. When the lawyers get through with the reservations required to accommodate these multitudinous specifications, the invitation to bid that could be simple becomes a monstrosity.

* * *

PHOTO IS SAFETY AID: In your industrial area is a safety organization which is a chapter of the National Safety Council. If you will examine its annual report on accidents in your locality you will be impressed by the improvement that has occurred in the last two decades. If your area is typical, you will note a decline since 1929 in accidental deaths caused by motor vehicle, public—not motor vehicle, home, industrial and "unknown." This decline is noteworthy because increased population and increased exposure to hazards have made more difficult the task of persons whose jobs are to promote safety.

Complementing the procedures advocated by the National Safety Council are safety methods developed by individual companies. In Crucible Steel Co. of America, for instance, Warren W. Hall (p. 96) has made photographs at the scene of an accident a potent factor in the company's excellent safety record. Here is an idea worth your thorough investigation.

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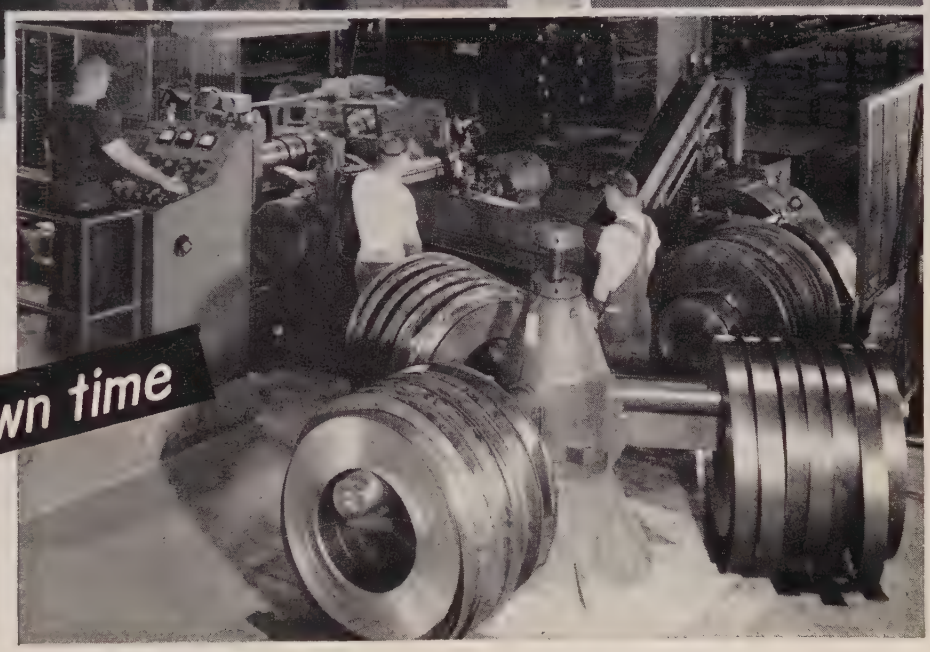
are built in these capacities

Gauge—.010 to .312
Weight of Coils—3000# to 50000#
Width of Coils—18" to 72"
Speed—100' to 2200' per min.



STAMCO Slitters

Available in sizes and speeds for warehouse and mill duty on ferrous and non-ferrous materials. Furnished with either expanding mandrel or cone-type uncoilers either manual or hydraulically operated.

Why not tell us your needs and we'll gladly give you complete details. No obligation.

STAMCO, Inc., New Bremen, Ohio

When a steel order goes through a mill, customers have a big advantage when everyone concerned with production decisions is handy and available. Inland's size and location mean that prompt personal attention can be given to every customer's problem as it comes up.

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METAL USERS' COSTS INCREASED
By Higher Metal Prices, Higher Wages and Higher Freight Rates
20%
MUST BE ABSORBED
80%
PASS-THROUGH OF INCREASED COSTS MAY BE ALLOWED BY OPS
?

Battle Over New Price Formula

OPS economists want a 60 per cent pass-through of increased costs for metal consumers; other officials say 100 per cent is necessary. A compromise is possible on 80

OU MAY BE allowed to boost the lling prices of your manufac- ired metal goods to reflect about per cent of the increased costs sulting from higher wages to our employees, from higher eight rates and from increases in eel, copper and aluminum.

OPS economists were in an up- ar last week. They had figured ey would allow 60 per cent. Then PS Boss Ellis Arnall returned to s desk after an out-of-town trip d suggested that the arrange- ent made at the White House th the steel industry might pre- ude the OPS from exercising its n judgment as to the amount the pass-through. He said that aybe a 100 per cent pass-through higher steel, copper and alumi- m costs might be necessary.

Pass to Steelman — Chances are at the hot potato will be passed Acting Defense Mobilizer John Steelman for a decision. What ally may develop is a compro- ise that would permit an 80 per nt pass-through of the total in gher metal, wage and freight costs. That's what happened in the copper castings price amendment, Amendment 7 to CPR-60. Because of Mr. Steelman's insistence, an 80 per cent pass-through of the increased cost of foreign copper was allowed. OPS economists, if left to themselves, would authorize a pass-through of only about 60 per cent.

If the authorized pass-through is 80 per cent, the fabricators will fare better than the steel companies. The average steel price rise of $5.20 is only 43 per cent of $12, which steel companies say is the cost increase of the July wage settlement. The percentage is even lower if added to that $12 is the cost increases from higher freight rates and other causes.

The Question—What will all this mean to the general price levels? Economists in industry interviewed by STEEL believe the effects will not be seriously inflationary, despite claims to the contrary by some Washington officials. Consensus is that many makers of automobiles, appliances and other consumer durables won't take advantage of the higher ceilings because of competitive conditions.

The wholesale price index, which climbed sharply just after the Korean war started, has been declining steadily ever since October, 1951. That drop will be halted now by the new conditions, but experts expect the index to hold steady for the rest of the year, at about 111 per cent of the 1947-1949 average. The consumer price index, now at about 190 per cent of the 1935-1939 average, may reach 193 or 194 by the end of the year—less than 3 per cent above the level at the beginning of 1952 and a degree of inflation not considered disastrous. Pressures on the consumer index are rents, utilities and food.

Steel Price Rule Set

Price hikes allowed are those detailed last week with several exceptions

PRICE STABILIZER Ellis Arnall last week signed the long awaited steel pricing order. It's effective Aug. 19 and will permit the steel companies to bill at new prices all shipments made since July 26.

The price increases allowed are those detailed in STEEL, Aug. 11, p. 56, with these exceptions:

Change — Under drawn wire in the section on carbon products, the

wording after "All Other Wire" is changed from "4.7 per cent of base price and extras" to "4.7 per cent of base price plus extras and deductions." That same change in wording is made for steel hardware cloth and steel screen cloth. A new classification is added to the carbon products, "Wrought Iron and All Carbon Grades Not Otherwise Listed." The wording for price increases of those products is the same as above. The price increase for carbon cold rolled strip specialties becomes $31.50. In the alloy and stainless category, cold rolled strip is deleted. Added is cold rolled strip, other than razor, with a permitted price rise of $28 and cold rolled strip, razor, with a permitted price rise of $90. The product classification under alloy and stainless that was described as "All Other Alloy including Carbon & Alloy Tool Steels, but excluding High Strength-Low Alloy" is changed to "All Other Alloy including Carbon and Alloy Tool Steels, Other than Alloys Listed Above, and including Stainless." The price increase allowed for those products is 4.7 per cent of base price plus extras and deductions. Previously listed separately, stainless steel is now included in the above classification.

Indications are that not all steel companies will raise their prices to the limit, because of competitive considerations. The order is Revision 1 of Supplementary Regulation 100 of the General Ceiling Price Regulation. It covers the many smaller steel producers who use GCPR, but not the larger companies which have a voluntary agreement with OPS. Those firms will get the same terms via a letter of authorization.

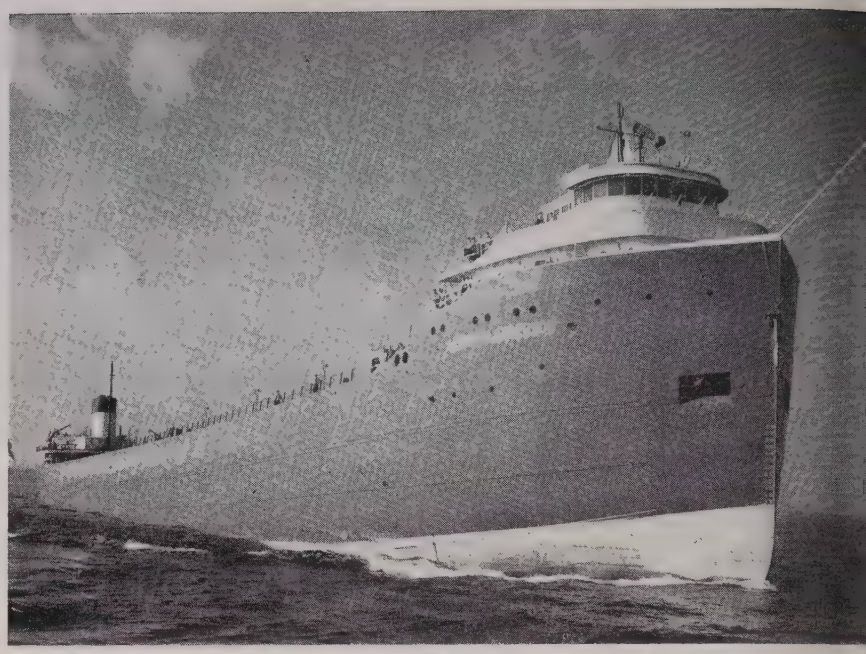
OPS last week intimated that new price ceilings for pig iron and iron ore will be ready soon.

Republic's Profits Skid

Republic Steel Corp. reports a 39 per cent decline in net income for the first half of 1952, $16,262,056, under the first half, 1951, $26,729,493. Second quarter earnings this year were $4,502,543, compared with $14,458,116, second quarter earnings last year.

Reason for the dip in profits: It was the steel strike, of course.

Report of the lagging profits came just as Republic tapped the first of four new open hearth furnaces being built in Cleveland. That 275-ton furnace, together with the three others in various stages of construction, will have an annual output of 672,000 tons of steel, increasing Republic's capacity by 24 per cent.



Iron Ore Movement Spurred by Growing Lake Fleets

Four new vessels being rushed into operation give a boost of nearly 800,0 tons of added capacity to the movement of iron ore from upper lake po Pittsburgh Steamship Division's *Arthur M. Anderson,* shown above, started first trip on Aug. 10. The *E. B. Greene* and the *Johnstown* are already in vice. The *Elton Hoyt II* was expected to begin its first trip late last we High water levels, coupled with extension of the summer load line season the emergency summer load line season by the Coast Guard from Sept. 15 Sept. 30, will give the ore carriers benefit of heavier loads for 15 more d

Gaps in Steel Supply

Steel production recoups quickly but NPA still must plug up holes

OFFICIAL OPTIMISM with the fast rebounding steel production is tempered by concern over inability as of late last week, to wrap up a back-to-work agreement at Allegheny-Ludlum Steel Corp., at the Ashland, Ky., division of Armco Steel Corp. and at Newport Steel Co.

All three companies are important in the rearmament program.

Critical Closedown — Allegheny Ludlum has heavy commitments to make high alloy steel and nickel-bearing stainless for jet engi atomic energy, chemical pla and other defense projects. N officials are estimating the cl down as costing about 35,000 t a month.

Ashland division of Ar makes plate and sheet for s cartridge cases. The loss ther estimated at about 55,000 t monthly. Inability to get this duction rolling could cause a s back to use of brass cartri cases which would in turn da the improved copper supply ture.

Lost Without Substitutes—N port Steel is making special a sheet wanted by the military. N officials say that the loss of nage at Newport can be made but that losses at Allegheny-L lum and Armco hurt badly, substitutes can't be found.

Moreover, says Defense Se tary Robert A. Lovett, mili production losses in many c can't be made up. Where it are on the joint chiefs' urgency double and even multiple s will be authorized to make up duction losses. In other cases,

can't be done because of lack of available metal. Mr. Lovett predicted that dollar defense expenditures would be off as much as 25 to 30 per cent for some months, even if production rates return to normal by late fourth quarter or early first quarter, 1953.

Language Difficulties—NPA also is wrestling with the job of distributing steel on an equitable basis. Apparently NPA is having trouble reconciling conflicts in the language of CMP orders with the language of M-1, the basic steel document. It appears possible that, in the first two months of the fourth quarter, the promise to clear up second and third quarter carryovers on a preferred basis cannot be met due to military set-asides, and other guaranteed reserves for directives, warehouses and further converters. If there isn't enough steel to go around, present thinking would defer the carryover of civilian producers.

What's not clear is what will happen should the military carryover, and other guaranteed reserves including the set-asides for fourth quarter orders, total far more than production capacity in the fourth quarter. An explanation is due to be made soon.

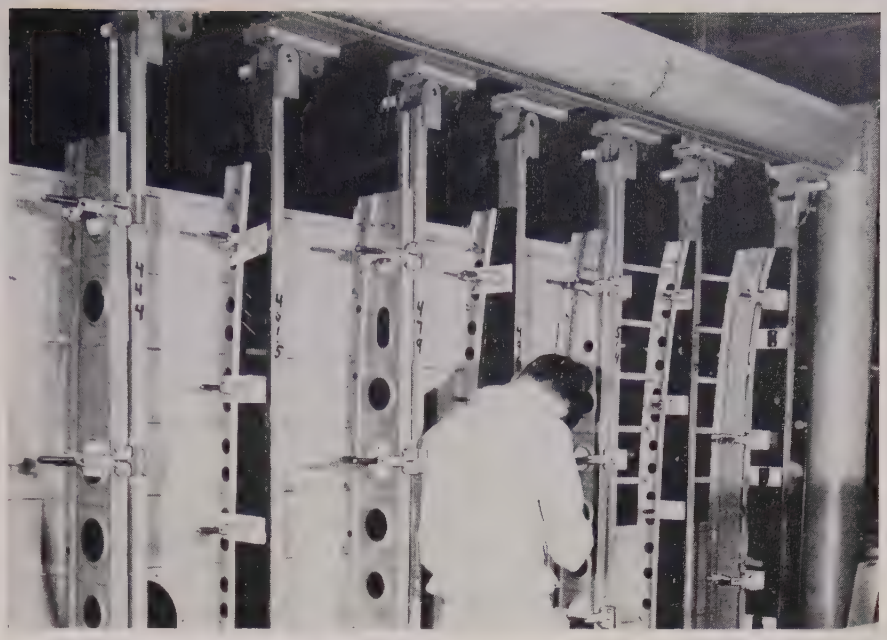
Meeting For Two? — Finally, NPA is trying to decide whether to call the two steel warehouse industry advisory committees into Washington. About 15 changes in the warehouse orders have been made since the last meeting of the two groups.

NPA is asking the steel industry to help police 30-day inventory limits for the balance of 1952. The compliance check was recommended by the steel products industry advisory committee.

July Steel Output Hits Low

Production of steel in the first seven months of this year fell to 46,637,256 net tons, a strike-caused loss of 14,351,224 tons from the corresponding period in 1951, reports American Iron & Steel Institute.

That total includes 1,605,000 tons of ingots and steel for castings produced in July, the smallest monthly output since October, 1949.



DE-STA-CO TOGGLE CLAMPS SPEED SETUPS FOR KAISER'S C-119 OUTPUT
. . . but jigs and fixtures remain a tight spot in tooling programs

Tooling Peak Flattens Out

Orders and backlogs for tools and dies are leveling off somewhat below last year's showings, but contract shops see no easing in their work load through 1954

TOOL and die shops are by no means out of the production woods yet. But new orders and backlogs are leveling off somewhat below post-World War II peaks reached last year.

New orders in June, 1952, were 10 per cent below the postwar peak reached in June, 1951, and backlogs declined slightly in June to 7 per cent under the postwar, possibly the all-time, peak of December, 1951. Contrasted to a normal wait of six weeks to two months, backlogs currently average four months, in some cases six.

Stretch to the Limit — That's only half the picture, though. To keep up with near-record ordering, tool and die shops are straining for more skilled help and added production facilities. In the meantime, the elastic factor of working hours has been stretched to the breaking point. Fifty-five to 60-hour, 6-day, two-shift work weeks are common in contract shops.

William N. Bachman, president, Bachman Machine Co., St. Louis, cites a critical shortage of 500 to 700 skilled tool and die makers in his area. Albert Goldman, vice president, Atlantic Mfg. Co., reports a shortage of 1500 skilled tool and die makers and all-round machinists in the Philadelphia area. Robert C. Renner, president, East Dayton Tool & Die Co., Dayton, O., estimates the need for 10 per cent more die makers locally. Herbert Harig, vice president, Harig Mfg. Co., Chicago, points out a need for 500 to 1000 men in the Chicago region. There are presently some 50,000 persons employed in tool and die work in contract shops, with again as many employed in captive shops.

Defense Is Demanding—Defense tooling is perhaps heaviest in the midwest and New England areas, says J. Kleinoder, general manager, John Volkert Metal Stampings Inc., Long Island, N. Y. In the New York City district alone, these requirements run to 80 or 85 per cent of the work being placed. The aircraft industry, electronics industry, Navy and Ordnance departments account for the bulk of the gage, jig and fixture demand. Inquiries are being received in New York even from firms in Los Angeles for aircraft jigs and fixtures.

The aircraft program in particular, and defense tooling in gen-

Railroad Expansion Program

	FREIGHT CARS	DIESEL-ELECTRIC LOCOMOTIVE UNITS
IN USE Jan. 1, 1952	2,040,883	12,452
IN USE June 1, 1952	2,055,000	20,519
GOAL, as of September, 1954*	2,167,653	28,086
UNFILLED ORDERS, June 1, 1952	99,000	3,125
STILL TO BE ORDERED	93,653 to 157,653†	4,342
AV'G MONTHLY OUTPUT, six months 1952	7,476	327

*Depending on rate of retirement of overage cars.

† Original goal date, July, 1954, moved forward because of steel strike.

SIDETRACKED for awhile by the steel strike, major railroads are getting up steam to reach equipment expansion goals set by DPA and the Defense Transport Agency (see table above). The railroads plan substantial buying this fall and early 1953.

Freight Cars—The answer to how many cars must be built varies with the rate at which over-age cars are retired. If old cars retire at the normal rate (72,000 cars per year), 256,653 new cars would have to be built. To conserve materials, it's a good bet that many won't be retired. Some government people think 40,000 a year is a likely figure. At that rate 192,635 cars would be needed to meet defense goals. At any rate, more cars must be built than in the recent past.

Locomotives—No problem: The number of diesel units still to be constructed to reach the goal was 7467. At 327 units per month (average for 1952's first six months), the defense goal should be met.

Rails—Purchases are due for a sharp increase when the steel supply eases. Normally the roads need 450,0000 tons per quarter; they've been getting 350,000 tons per quarter.

eral, account for a swing in demand away from dies toward jigs and fixtures. That's because stampings, which require dies, fill fewer defense needs than they do in civilian applications. Exception to that rule is the big defense demand for forging dies.

Long Pull Ahead—While tool and die makers are beginning to doubt any future peaks in defense tooling requirements, they foresee no slack in their work load through 1954. "Stretch outs" do not cause any real easing in their business since military models continue to change as long as there is any threat of full mobilization. And sustained revisions in design mean sustained demand for tools and dies.

DPA Sets Expansion Goals for Five Industries

New expansion goals for five industries are announced by the Defense Production Administration. These include goals for military electronic products, materials handling equipment, lacquering metal cans and fabricating black plate cans, phosphate treatment of steel drums, cotton gins.

Under the military electronics program, certificates of necessity for rapid amortization are already issued for 68.2 per cent of the total $396 million goal.

Practically all certificates of necessity already are issued for production of the 200 cotton gins, says DPA.

PROGRAM	GOAL	TERMINAL DATES
Military electronic products	$396,000,000	Jan. 1, 1950—Jan. 1, 1954
Materials handling equipment	26,000,000	Jan. 1, 1951—Jan. 1, 1954
Lacquering metal cans, etc.	5,500,000	Jan. 1, 1950—Dec. 31, 1951
Phosphate treatment of steel drums	6,000,000	—Jan. 1, 1954
Cotton gins	*	—Jan. 1, 1953

* Goal is 200 cotton gins in addition to those available for the 1950 crop.

Small Plants in DPA's Favor

Small defense plants are getting special attention from the Defense Production Administration as 1.5 of 244 certificates of necessity approved from July 25 through July 31 were for facilities involving $100,000 or less. Special consideration is also being given to applications designated by NPA Office of Small Business as meriting it.

The three largest certificates issued in the latest period were Parke, Davis & Co., Detroit, $1[illegible] 451,800; Monsanto Chemical Co St. Louis, $18,415,000; and Phillips Petroleum Co., Sweeny, Tex., $1[illegible] 452,850. Total value covered all 244 certificates was $151,12[illegible] 470.

With the certifications just nounced, accelerated amortizat amounting to $21,799,472,709 r

ıas been approved for 13,018 new ›r expanded facilities.

Civil Projects Win Approval

Allotments of controlled materials for the construction of 162 commercial, religious, municipal and entertainment projects, costing more than $121 million, are approved by NPA for delivery in third and fourth quarters, 1952.

O.K.'d just prior to the steel strike, these projects may not actually get delivery until 1953 as defense expansion jobs have top priority on controlled materials. But, new NPA regulations provide that fourth quarter allotments will be valid for delivery through February, 1953, and Construction Controls Division projects (non-defense) with prior allotments are assured priority after defense requirements have been met.

Export Curbs Lifted

All types of steel controlled materials coming from distributors may again be shipped, against export licenses, for use in the manufacture of consumer durable goods abroad, according to Office of International Trade which has completely removed the ban imposed by its recent Order 384.12, now revoked.

Farm Equipment Off for 1953

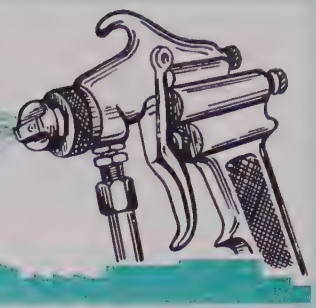
Because of a serious shortage of new farm machinery, farmers may have difficulties planting and harvesting next year's crops, says John Ransom, director of the Agricultural Machinery and Implements Division, National Production Authority.

Production of that equipment must get underway in the third and fourth quarters of 1952, but the steel strike cut into allotments for the industry so much that it may mean a setback of as much as 30 per cent of 1953 requirements. However, the 1952 crop will be harvested 100 per cent because most farm implement factories were able to keep a good portion of their production going during the strike.

The story is the same for that industry as for most others—imbalance of inventory.

INDUSTRY UNDER THE GUN FINDS

SPRAYING IS PAYING



THE INNOCUOUS spray gun is becoming heavy cost-cutting artillery that packs a lot of sales pressure. Research has made it possible to spray everything from glass to flock, from drawing compound to undercoating and from copper to cake icing. Spraying has so greatly broadened its techniques that two of the biggest industrial spray equipment producers, Binks Mfg. Co., Chicago, and DeVilbis Co., Toledo, O., have established tuition-free schools to acquaint industry with the possibilities of their equipment, its maintenance and operation.

Today spraying is reaching every corner of the metalworking world and it's painting a bright future for the handful of spray equipment manufacturers. They stenciled a $50 million sales volume on the records last year and figure to hit $60 million in 1952.

Heavy Sprayers—Heaviest single user of spray painting equipment is the automotive industry with the appliance industry a close second. The automotive body shop's men come in for a strong share of the output as the average fender-bender might suspect.

Most manufacturers have 10 to 35 per cent of their output in the direct defense category and undoubtedly much more is utilized indirectly in the production of defense wares, but spray equipment manufacturers attribute their increasing sales volume to the widening number of special applications of their product.

Covering Angles — Spray firms have made startling progress in recent years in increasing the versatility of their equipment. Steps have been taken to: Modify equipment to spray hitherto unsprayable substances; alter substances in such a manner as to make them sprayable; and improve spraying efficiency and lower costs in established spraying processes.

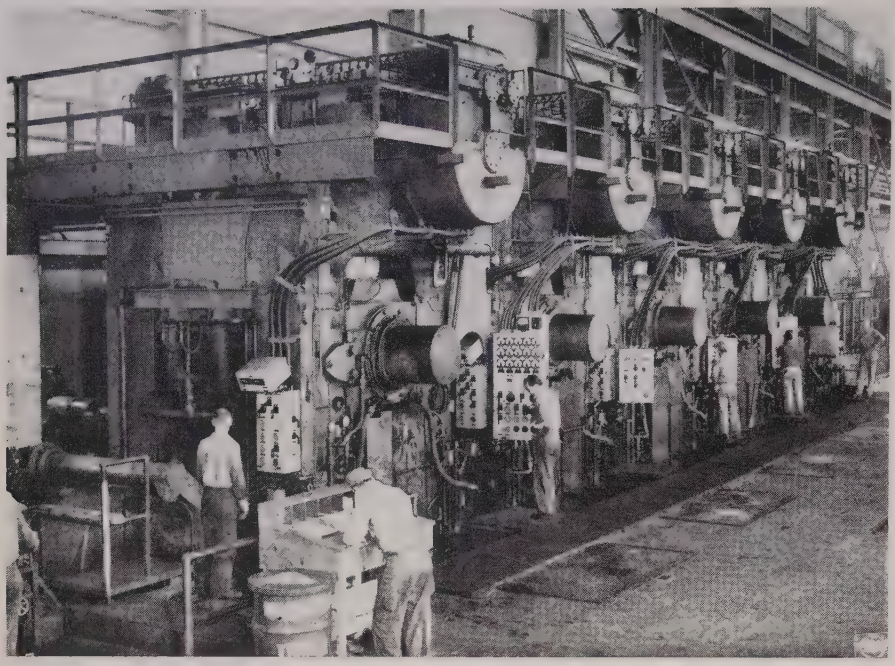
A good example is hot paint and lacquer spraying. Heating elements raise the temperature of the liquid, lowering viscosity. That means less solvent is needed to serve the same function and 40 to 70 per cent less air pressure is needed to spray the same paint. Result: About 50 per cent of the normally required solvent is saved and less air pressure reduces overspray about 50 per cent.

Juice Spraying — Another technique just coming into its own is electrostatic spraying. The items being sprayed are given an electric charge which attracts the particles of paint from the spray gun. Overspray past the item is reduced markedly and the saving in paint is high.

Automatic spray painting is being investigated by at least one of the major automobile firms for final body finishing. It is already being used for the prime coat at some automotive installations. Automatic spraying of drawing compound before each draw is being utilized by some stamping firms, manual spraying by many others.

If It Flows—Metals like aluminum and copper are being sprayed through use of an oxy-acetylene flame which enables the air pressure to vaporize the metal. Uses of the process include building up worn machine parts or parts that were imperfectly produced originally and coating for corrosion resistance such as spraying zinc or aluminum on bridges, hulls, tanks, etc. Glass is sprayed, too. Interiors of some home and industrial hot water tanks are coated with finely pulverized glass in a suspending agent. When the agent dries the tank is heated until the particles of glass melt and fuse forming an actual glass coating.

So the spray guns are aiming high. If your coating can be made a liquid or suspended in one you can bet your paint brush the spray equipment men are looking it over.



Brighter Side of Steel Strike

The steel strike, which had harmful effects most places, actually helped speed up the production of tinplate at Kaiser Steel Corp.'s $20-million mill, Fontana, Calif. Because of the tinplate shortage for making food cans, company engineers speeded up preproduction tests and made the first shipment of tinplate two months ahead of schedule. Annual capacity is rated at 200,000 tons

Mobilization Agencies Simmer Over Expected Changes

CHANGES are cooking in the mobilization agencies. Henry H. Fowler, defense production administrator, said at his news conference last Thursday, in reply to a question on how long he would stay on the job, that he hoped to drink a cocktail on New Year's Eve without any inhibitions. He refused to explain further.

At Defense Production Administration level, there's a noticeable tightening up—in part caused by budget cuts. However, something stronger than that seems to be brewing. It could mean the DPA is getting prepared for a somewhat clearer and more well-defined job. DPA would probably be the center of any mobilization agency of the War Production Board type, if the decision is ultimately to provide an emergency control agency with both policy and administrative authority rather than the current hydra-headed affairs.

Alternative—Or, the tightening up could mean an attempt to provide a shotgun wedding between the Office of Defense Mobilization and the DPA.

The same kind of tidying up is taking place in the Pentagon. The Munitions Board has a new charter with most of its authority now in the hands of its chairman, John D. Small. Unified procurement is on the way, with an order due from Defense Secretary Robert A. Lovett about Sept. 8. A single service will be assigned the job of procurement of each of the commodities or groups of commodities which are purchased by the military.

Problem of Personnel — More changes are due, too. A management committee is now taking a long look at Munitions Board functions and organization. Personnel changes are expected to follow. Timing will depend on when the studies are completed and conditions at that time.

Renegotiation Explanations

The Renegotiation Board has reports from 20,000 contractors and subcontractors in preparation for determining "excessive" profits in defense business with 20 government procurement agencies. Several thousand additional reports are expected this fall as defense contractors comply with the 1951 Renegotiation Act.

Already, government contractors have voluntarily refunded $15,779,000 to the Renegotiation Board from profits since July 1, 1950.

To help explain the process, a booklet titled *The Facts of Renegotiation—What It Is and How It Works* is available from the Information Office, Renegotiation Board, Washington 25, or from regional renegotiation boards.

U. S. Signs Cobalt Agreement

Silver Miller Mines Ltd., Toronto, Ont., and the United States government entered into a contract covering the sale of 5 million pounds of cobalt metal to this country. The company will smelt the concentrates, exporting the cobalt and retaining the silver and other metals in accordance with Canadian government regulations. With current expansion, Silver Miller hopes to reach production of 1 million pounds of the metal annually.

SELECTED DEFENSE CONTRACTS IN EXCESS OF $250,000

PRODUCT	CONTRACTOR
Lathes	Hendey Machine Co., Torrington, Conn. R. K. LeBlond Machine Tool Co., Cincinnati
Dimpling Machines	Aircraft Tools Inc., Los Angeles
Trailers	Welded Construction Engineering Co., Cleveland
Semi-Trailers	Heil Co., Milwaukee
Desks	Harrison Sheet Steel Co., Chicago Superior Sleeprite Corp., Chicago
Aircraft Parts	Eclipse-Pioneer Div., Bendix Aviation Corp., Detroit
Aircraft Engines	Aircooled Motors Inc., Syracuse, N. Y.
Fuel Tanks	Perfection Stove Co., Cleveland Fletcher Aviation Corp., Pasadena, Calif.
Projector Sets	DeVry Corp., Chicago
Camera Control Systems	Bill Jack Scientific Instruments Co., Solana Beach, Calif.
Dryers, Photographic	Pako Corp., Minneapolis
Radio Sets	Radio Corp. of America, New York Kingston Products Co., Kokomo, Ind.
Transmitters	U. S. Gage Div., American Mach. & Metals Inc., E. Moline, Ill.
Receivers	Stromberg-Carlson Co., Rochester, N. Y.
Tuning Units	Sylvania Electric Products Inc., New York
Radar Sets	Radio Corp. of America, New York General Electric Co., Schenectady, N. Y.

IECKLIST ON CONTROLS

/ERNMENT control orders are digested listed each week in this "Checklist on trols." For complete copies of NPA or-, write to NPA Distribution Section, First ment, New GAO Bldg., Washington 25. copies of OPS orders, contact nearest district or regional office. For copies OPS news releases, write David S. Phillips, ctor, OPS Administration Services Division, porary E Bldg., Washington 25.

Materials Orders

PPER—Amendment 1 to NPA Or- M-16, issued and made effective g. 5, 1952, states that allotments for ducing products listed in Section 2 of M-16 shall be in terms of esti- ted weight of the brass mill products n which they will be made.

AD TIME—Amendment of Aug. 6, 2, of Direction 6 to NPA Order M-1 ninates the 15-day period during ch steel mills schedule all orders on irst-come, first-serve basis for Nov- ber deliveries of products having a day lead time. The 15-day period is uced to seven days for November very of products having a 60-day l time.

LYETHYLENE — Revocation of edule 5 to NPA Order M-45 elimin- s allocation controls on polyethylene, lastic used in large quantities for ering military communications wire.

N PLATE—Amendment of Aug. 12, 2, of NPA Order M-24 lifts end-use rictions from mill accumulation plate, ssorted temper tin plate, unmended nders, waste-waste and other coated ndaries. It was effective Aug. 12.

Controlled Materials Plan

TOMATIC ALLOTMENTS—Direc- 17 and 18 to CMP Regulation 1 and endment 2 to Direction 1 of CMP ulation 1 creates an automatic al- ent procedure designed to benefit roximately 10,000 manufacturers of products beginning with the first rter of 1953. These producers may ulate their own allotments and ob- necessary priority assistance in pro- ng controlled materials without sub- ting CMP-4B applications. The new hod is to save time, money and erwork. It also will help these manu- urers know each quarter the amount heir allotments without waiting for A authorization. Automatic allot- t plus self-authorization of orders free the majority of small businesses n filing applications for allotments of rolled materials. However, NPA still process individual CMP-4B ap- ations accounting for approximately er cent of the carbon steel produced. ctions 17 and 18 and Amendment 2 e issued Aug. 11.

NPA Regulation

EL—Amendment of Aug. 13, 1952, Direction 5 to NPA Regulation 2 s the right of steel producers to edule deliveries of steel placed r NPA directive to orders issued re Aug. 13. The amendment was tive Aug. 13.

Price Regulations

BASE PERIOD PRICE—Interpretation 34 of Ceiling Price Regulation 22, issued Aug. 4, 1952, clarifies Section 37 (e) of CPR 22. The determination of the ceiling price for an article begins with the selling price in effect for the article during the manufacturer's base period, regardless of the circumstances and conditions, including mathematical error, under which the price was set.

ALUMINUM—Supplementary Regulation 113 to the General Ceiling Price Regulation and Amendment 11 to Ceiling Price Regulation 67 authorize an increase of one cent a pound in ceiling prices for producers of primary aluminum pig, alloy pig, and primary aluminum ingot, and an increase of 5 per cent in ceiling prices for producers of other primary aluminum mill products. Increases were effective Aug. 4, 1952.

BOTTLE CAP LINERS—Amendment 6 to General Overriding Regulation 8 exempted manufacturers' sales of metal and plastic bottle cap liners from price control Aug. 6, 1952.

MANGANESE—Ceiling Price Regulation 163 issued on Aug. 8, 1952, and made effective on that date establishes increased dollars-and-cents ceiling prices for ferromanganese, manganese metal and other manganese metallurgical products. Previously, ceilings for these products were established under the General Ceiling Price Regulation. In general, CPR 163 increases these ceilings about $40 a gross ton over GCPR ceilings.

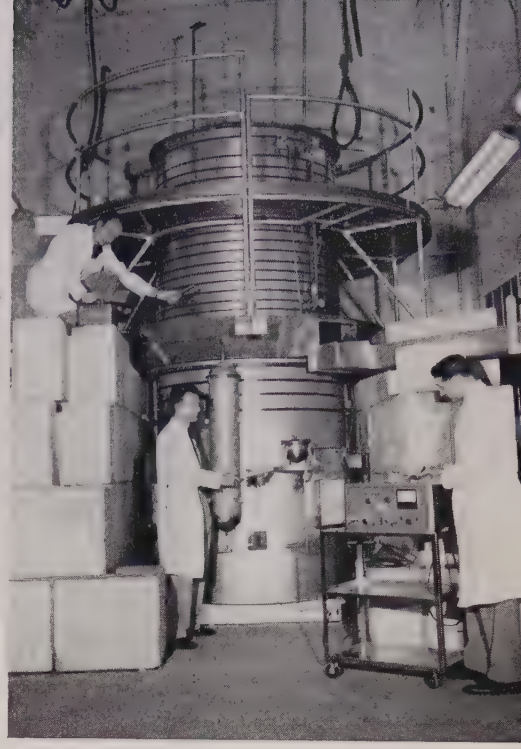
ALTERNATE METHODS — Amendment 3 of Supplementary Regulation 4 to Ceiling Price Regulation 30 permits manufacturers of machinery and related products to propose a method of adjusting their ceiling price in accordance with section 402 (d) (4) of the Defense Production Act of 1950, as amended, where they can prove satisfactorily that they find it impracticable to avail themselves of the other provisions of SR 4 relating to adjustments. Amendment 3 was issued Aug. 8, 1952, effective Aug. 13.

COPPER—Amendment 7 to Ceiling Price Regulation 60, effective Aug. 19, 1952, authorizes copper and copper alloy castings producers to increase their ceiling prices to reflect increases in the cost of imported copper or copper derived from imported copper-bearing materials. Amount of increase to be reflected is calculated at the beginning of each calendar month by multiplying the percentage of foreign copper actually used in producing castings in the preceding calendar month by 80 per cent of the cost of such foreign copper in excess of 24.5 cents a pound, the domestic ceiling price. For the first calendar month after Aug. 19, 1952, a producer will calculate the amount of increase to be reflected by using the percentage of foreign copper as 40 per cent and the cost of such copper as 36.5 cents a pound, the prevailing foreign price. Thus, the ceiling price adjustment for the first calendar month would be 3.84 cents a pound of the copper content of the castings.

Uranium Plant Slated for Ohio

A $1.2 billion gaseous diffusion plant for the production of uranium 235 will be built in Pike County, O., says the U. S. Atomic Energy Commission. The 6500-acre site is 22 miles north of Portsmouth, O., and was chosen mainly on the basis of power and water supplies available there.

A maximum of 1.8 kilowatts of power will be needed when the plant is in full operation, which is scheduled to take about four years. New power plants will have to be built.



Boiling Atoms

Atomic energy engineers are measuring background radiation level of this reactor at the Downey, Calif., plant of North American Aviation Inc. Designed and built by North American's atomic energy research department, it is a water boiler neutron source to be used for research. The blocks on the left are two-feet thick concrete used for shielding from the reactor's radiation

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Concluded from p. 12.

in the price of steel benefits any part of the steel industry except the producers. If any provision has been made for the makers of steel products to add to their prices the increased cost of material nothing has been said about it.

If you know of any way of taking care of this situation, we believe it would be a great service to your readers to have it incorporated in your magazine.

C. P. Eustice
president
Galena Mfg. Co.
Galena, Ill.

• *Tailored price regulations for each steel consuming industry are not yet set up and there is no interim relief in effect.* STEEL *explored this subject on Aug. 4, p. 61 and Aug. 18, p. 65.*

Windows of Washington

By E. C. KREUTZBERG *Washington Edi*

Coke Expansion Story

(Net Tons)

United States coke capacity as of Jan. 1, 1952	75,067,450
Additional capacity from 262 new ovens to be completed in 1952 (net gain after deducting ovens idled for dismantling or rebuilding)	2,317,000
Additional capacity from 388 new ovens to be completed in 1953 (net gain after deducting ovens shut down for dismantling or rebuilding)	2,877,750
Indicated capacity as of March, 1954 (moved forward because of the 55-day steel strike from the original target date, Jan. 1, 1954)	80,262,450
Capacity goal established by DPA and DSFA	84,000,000
Indicated deficit for March, 1954, goal	3,737,550

SURPLUS NOW ——— **SHORTAGE LATER**

The steel strike moved the expected coke shortage from July 1, 1953, to Jan. 1, 1954, say DPA and Defense Solid Fuels Administration. Coke inventories of at least 2 million tons accumulated during the strike should keep blast furnaces and foundries going through 1953. Relief from the shortage seen for 1954 is dependent on: How well the coke expansion goal is met (supply) and how well the foundry and blast furnace expansions are met (demand). Both are behind schedule and lowered demand could ease the prediced shortage. Bottleneck in coke oven construction: Refractory bricks, special shapes and requisite special steel castings

Baffled by Bafflegab? Blame Your Congressman

BLAME FOR the gobbledegook language which clutters up government contracts should be addressed chiefly to Congress.

A high military procurement man handed STEEL a 24-page bid invitation and said: "We could state what we have to say in less than one page—what we want, when and where we want it, and the specification references. The other 23 pages in this invitation contain the clauses called for by law and administrative orders. We could simplify procurement tremendously if we could omit these clauses—but we can't."

How Come?—Why does Congress legislate the laws, amendments and riders which necessitate these clauses? Pressure groups ask for special treatment and Congress usually says, "yes." Thereupon is born a new clause.

This situation is fast approaching unworkable proportions, particularly because some of the requirements added in the past few years conflict with each other. The procurement officers must "Buy American;" at the same time they must buy from NATO countries and buy on a reciprocal arrangement with Canada. They must avoid concentrating orders and must distribute contracts equitably among a maximum number of companies to discourage monopoly. They must favor companies with low materials allotments for civilian production. They must make fullest use of small firms (they have to follow the ridiculous rule that a small firm is one with fewer than 500 employees). They must buy from many companies to broaden the industrial base and encourage geographic dispersal of plants, at the same time they must maintain "economic equity" between geographic areas.

Furthermore—They must use the bid-call principle as much as possible and, when procuring by negotiation, use competition to get lowest negotiated prices. They must integrate procurement with industrial mobilization planning. They must use existing open industrial capacity to the maximum. They must buy so as to preserve critical supplies. They must not buy in advance of need (and that is a headache). They must use the incentive principle to reward contractors who reduce their cos They must extend bid time to low for bids from distant firm They must place contracts with view to economy in transportati facilities. They must favor fir in distressed areas. They m buy so as to keep government penditures to a minimum. Th must preserve special skills for more difficult production tasks

Contractors certainly are w ranted in harshly criticizing th difficult and conflicting requi ments, many of which add to people's costs both as taxpay and consumers. But they sho understand that the job of strea lining procurement can be done only one place. That is Congre

Capital Compass

A sampling just completed the Navy of its prime contract and the first tier of subcontract shows that of every procurem dollar spent about 50 cents goe small business. Results will be published because of the sence of a clear definition as what constitutes "small b ness."

You can economically grind small quantities on the CINCINNATI FILMATIC CENTERLESS

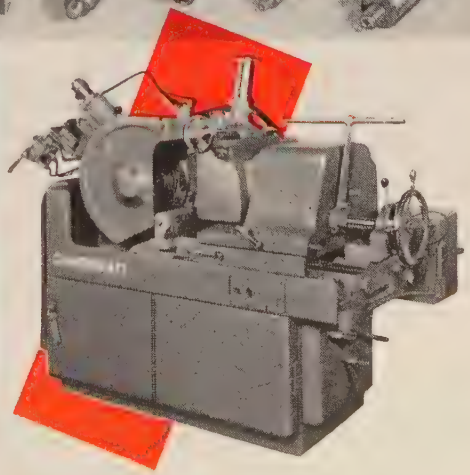
ose-up of a CINCINNATI No. 2 Centerless Grinder set
o for a typical infeed job. The Hydraulic Profile Tru-
g equipment over the regulating wheel is especially
esirable on machines used for small lot production.

Are you acquainted with the possibilities of grinding small quantities on a CINCINNATI FILMATIC Centerless Grinding Machine? For lowest cost production, do these two things: 1) Group together all parts requiring a particular type of setup. You will eliminate frequent changes from thrufeed to infeed jobs. 2) Group all parts together by diameter. It takes less time to change the setup for a small difference in diameter than a large difference. ¶ It will certainly be to your advantage to investigate the CINCINNATI Centerless for grinding a wide range of parts. A more complete story of economical small parts production may be obtained by writing for "Principles of Centerless Grinding," publication No. G-503-2.

CINCINNATI GRINDERS INCORPORATED
CINCINNATI 9, OHIO

bove: These widely differing parts were all ground on a CINCINNATI No. 2
enterless Grinder. Average quantities range from 25 to 500 pieces.

CINCINNATI No. 2 Centerless Grinder. Catalog No. G-611 contains complete specifications. Copy sent on request.



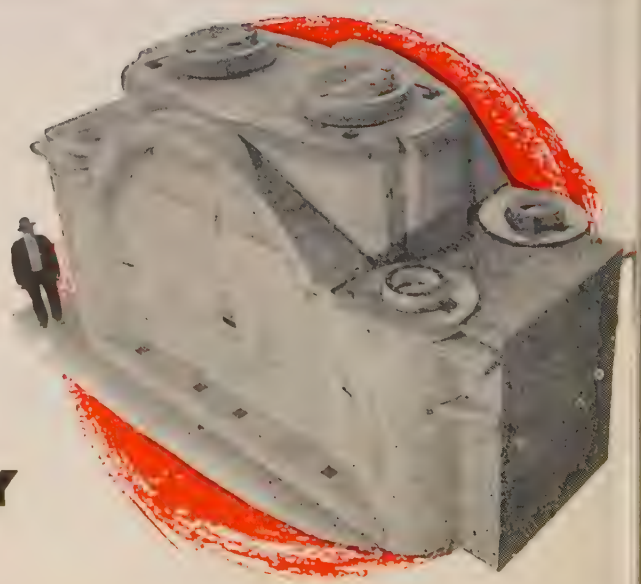
CINCINNATI

NTERTYPE GRINDING MACHINES • CENTERLESS GRINDING MACHINES
NTERLESS LAPPING MACHINES • MICRO-CENTRIC GRINDING MACHINES

PATTERN SHOPS AT MESTA

Expert craftsmen have every facility for making patterns of any size or intricate shape in Mesta's modern Pattern Shops.

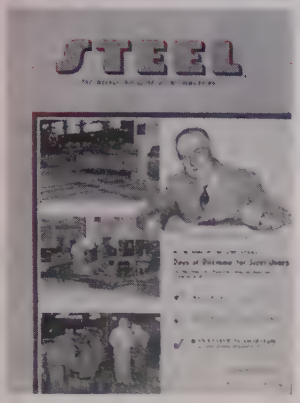
Illustration at right shows the pattern for a 12,000 ton forging press cast steel cap.



Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA



How is a steel consumer faring these days? STEEL here takes you on a visit to one to find out.

Life with Champion of Champion Rivet

THE STEEL strike made one hing clearer than ever: Executives n small and medium-sized com-anies are going to have to fight or their rights. They're getting queezed tighter and tighter in this ontrolled economy."

So says T. Pierre Champion, imself a president of a medium-ized firm, Champion Rivet Co., Cleveland. His days now are in-reasingly preoccupied with three roblems aggravated by the steel trike: Shortage of steel, rising naterial and labor costs and con-rols on both prices and materials.

Little Help—"I hear a lot of talk rom Washington," he says, "about elping the medium-sized producer, ut it's simply talk with little real vidence of help. We have been addled with an ever increasing mount of paper work because of overnment controls. The little fel-ow is obliged to fill out the same umber of forms and reports as the arge fellow."

Mr. Champion, like officials in housands of other medium sized ompanies, may do a little of every-hing in a day—general supervi-ion, sales, purchasing, engineer-ng or planning for the future of is children and grandchildren. hree generations of his family ave been connected with the com-pany. His father, David J. Champion, founded it in 1895; his son, also named David J., is assistant to the president and does a lot of the leg work in Washington.

Handicapped — One typical day in the business life of the present president of Champion Rivet began with a conference with Thomas J. Lawless, vice president in charge of sales. Their problem: To keep the railroad, shipbuilding, construction and other customers satisfied in their requirements for the company's rivets and welding electrodes. The strike-caused steel shortage was keeping output low.

Both men believe that the company has built "character" with its steel suppliers in more than half a century of business. They believe that the character is such that the company would get its reasonable share of steel from suppliers without benefit of federal controls. "These regulations!" Mr. Champion was saying. "I'm realistic enough to know that I must play by those rules of the game, but they make us like a fighter going into the ring with one hand tied behind his back."

For what other types of executives have to face in a typical day, see STEEL, Apr. 14, p. 74, on a purchasing agent and June 9, p. 72, on a sales vice president.

Big Factor—Steel is a big factor in Champion Rivet's operations. It has the capacity to use in excess of 5000 tons per month in coiled rods, straight length bars and drawn wire. It gets the bulk of its steel from mills in the Cleveland and Youngstown areas, plus some from Chicago producers. Because the cost of steel represents about 60 per cent of the selling price of its products, it operates on a close margin and cannot afford to purchase steel from dislocated sources.

The price of steel is all-important and that morning Pierre Champion and Tom Lawless studied again the probable new steel quotations. "The mills get their new price rises, but what do we users get?" Mr. Champion asks. "We've got to wait until OPS gives us clearance and in the meantime must bill at our old prices." He hopes for a speedy adjustment in CPR 118, the tailored priced regulation for the fastener industry. But judging from his experience as a member of the industry advisory committee for fasteners, he's skeptical as to how soon it will come.

Wages, Too — Just after lunch Mr. Champion had a meeting with his personnel director, George W. Farwick, and the works manager, C. P. Diemer, to study the settlement the steel companies made with the union. Champion Rivet's

new wage rates will closely match those of the steel industry as that has been their historical pattern. The union at the Cleveland plant is the United Auto Workers—AFL, while employees at Champion Rivet's East Chicago, Ind., plant are represented by the United Steelworkers of America—CIO. The company has never had a strike.

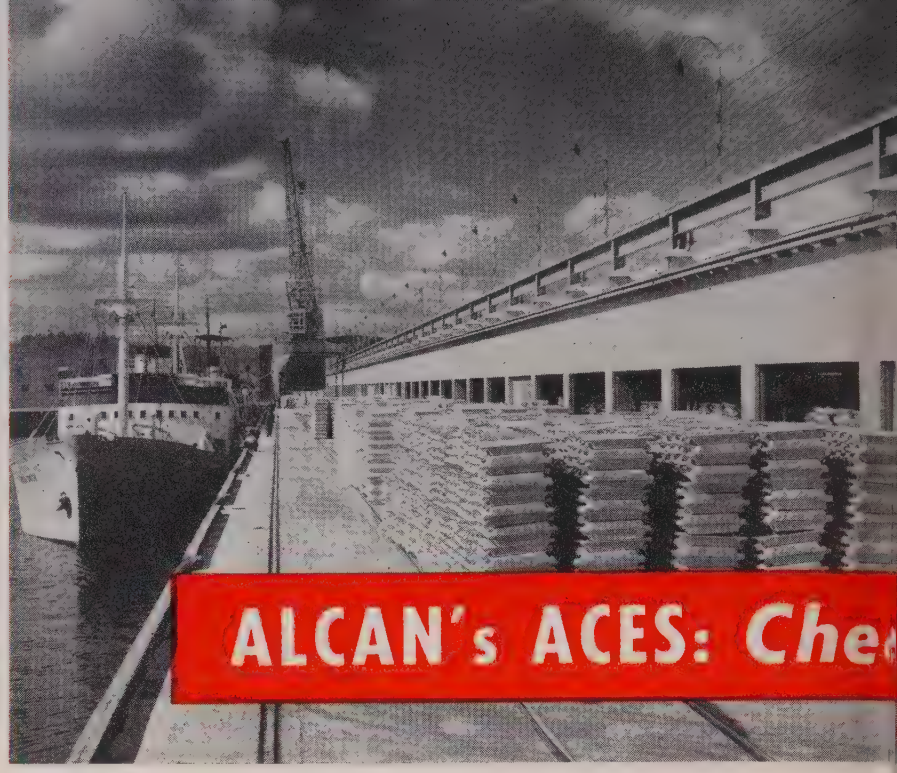
Mr. Champion next spent time with W. J. Reilley, secretary and treasurer, who advised him that the company's profits for the first six months of 1952 were about 30 per cent less than for a like period in 1951. Unless new shipments of steel arrive in considerable volume, the picture for 1952 will be dismal despite an unprecedented backlog.

More Cheerful — On the agenda that afternoon was also a cheerful bit of business—the presentation of a letter of appreciation and a check to Joseph Koprowski retiring that day after 50 years of service. He helped to train Mr. Champion to operate a hot heading machine. That was during the period of Pierre Champion's five-year apprenticeship beginning in 1922 in all activities of the company. "My father insisted on that training," the son recalls. "I'm glad now that he did for it has helped me in my day-to-day activities here, especially in the 17 years since I've been president to understand our 250 employees."

After a ceremony with the 50-year veteran, Mr. Champion discussed with Charles F. Silva, assistant treasurer, their proposed trip in August to attend a directors' meeting in Mexico City where Champion Rivet has a branch plant.

Magnet — Even in that conversation, the talk eventually veered around to steel supplies. "A long term study of the steel supply situation should be made," the company president believes. It's difficult for him to reconcile the fact that producers of nonessential items are able to get steel simply on the basis of their size whereas a medium-sized company such as his, whose products for more than 50 years have been going into essential railroad cars and ships, can't get enough steel.

"I repeat," he says, "I'm willing to take my chances on getting steel without CMP 'help'."



Aluminum from Arvida's smelter is loaded aboard ship at Port Alfred by Alca

Supplier of one-fourth of the world's aluminum taps Cana da's abundant hydroelectric potential to feed power-hungr smelters at a cost that can't be matched in the U. S.

PIONEERING FOR POWER in a vast underdeveloped region of Quebec, Aluminum Co. of Canada has caged another free-flowing river to serve the world's largest aluminum production area.

Far above the mouth of the Saguenay river—long-famed for its tourist cruises—the Peribonka river feeding massive Lake St. John is Alcan's latest prey. When fully harnessed the Peribonka will yield half a million horsepower to the privately financed network's capacity.

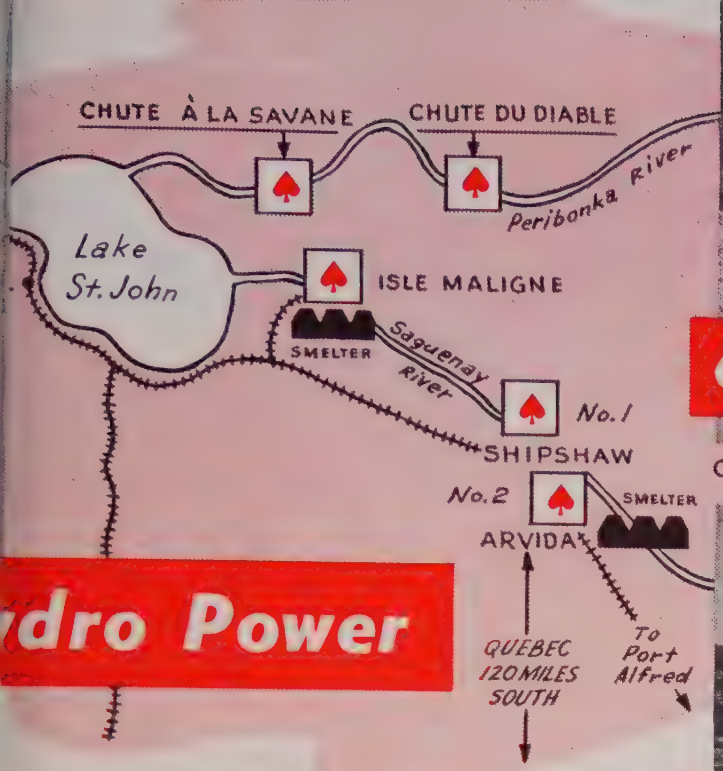
Two of a Kind—First of two dams and powerhouses on the river spun into action last week, in ceremonies witnessed by representatives of the U. S. and Canadian press. Its twin will go into operation early next year. Each dam will generate 270,000 horsepower — enough energy for 45,000 tons of aluminum annually.

Saguenay district aluminum plants now drain 2 million horsepower from the waters of Lake St. John and the Shipshaw river. With the Peribonka additions, Chute du Diable and Chute a la Savane, power turnout will approach that of the vast Grand Coulee system i the U. S.

Non-Stop — Constructing th dams in 21 months required 70 men at the two sites. They exc vated over a million cubic yards rock and poured 734,000 cub yards of concrete, working arou the clock in temperatures th dropped at times to 40 degrees b low zero.

A unique design feature of t power plants: Generators we lowered into the dams themselv rather than housed in convention buildings. Canadian Allis Chalm ers and Dominion Engineerin Works each supplied five turbin for the dams. They drive ten 5 000 hp generators built by Can dian Westinghouse and Canadi General Electric.

Old Friends—Aluminum produ tion is not new to the Maine-li Saguenay district. The two gre up together. Oldest smelter Canada was built in Shawinig Falls in 1900. Largest one in t world is at Arvida, which alo turns out 350,000 tons year That's nearly twice the planned c pacity of Kaiser's Chalmette, L



Chute a la Savane: 270,000 hp abuilding on the Peribonka

Chute de Diable: Another 270,000 hp harnessed this year

orks, which will be biggest in the J. S. when completed.

The Quebec area's facilities could e dwarfed eventually by Alcan's ammoth Kitimat project abuildng in British Columbia, with its ltimate possible capacity of 550,-00 tons. Output by 1954, howver, will be only 92,000 tons. Total uebec production rate early next ear will pass the 500,000 ton mark. auxite for Quebec's plants comes rom British Guiana. Alumina rom Alcan's new plant in Jamaica ill be processed in the Saguenay rea for about two years until Kitiat can absorb it.

Call of the Wild—How can such remote region, truly on the inge of civilization, qualify as an uminum center when it lacks all w materials necessary for pro-ucing the metal? The location is compromise, as are most indus-ial sites.

No other place in all of North merica combines optimum eco-omic conditions for making alu-inum. One reason is that supply urces for raw materials are wide-read. Bauxite, fluorspar, cryo-e, soda ash, pitch, lime and pe-oleum coke are needed. Trans-rtation facilities, market accessi-lity and power are weighty fac-rs to be considered.

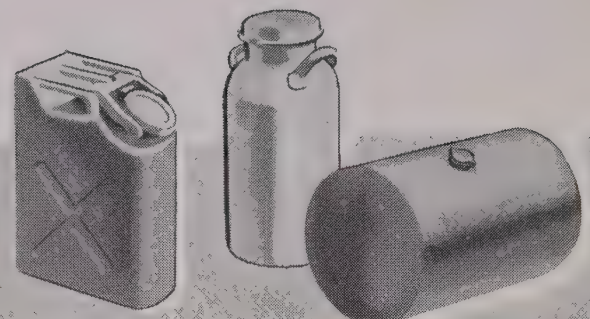
Economics of aluminum production dictate, above all, a cheap and stable power supply. Almost 10 kw of electricity are needed to produce one pound of aluminum. Power generally accounts for nearly 20 per cent of the cost of producing aluminum. If electric rates go up *one mill* per kilowatt hour, aluminum costs would increase one cent a pound, or $20 a ton.

Look North—Canada, with its vast hydroelectric resources, is as well equipped as any place in the world for aluminum production. Only a quarter of its 55 million horsepower potential has been developed. The Saguenay river-Lake St. John area with water storage capacity of 400 billion cubic feet provides dependable power at an estimated 1 to 1½ cents per pound of metal produced.

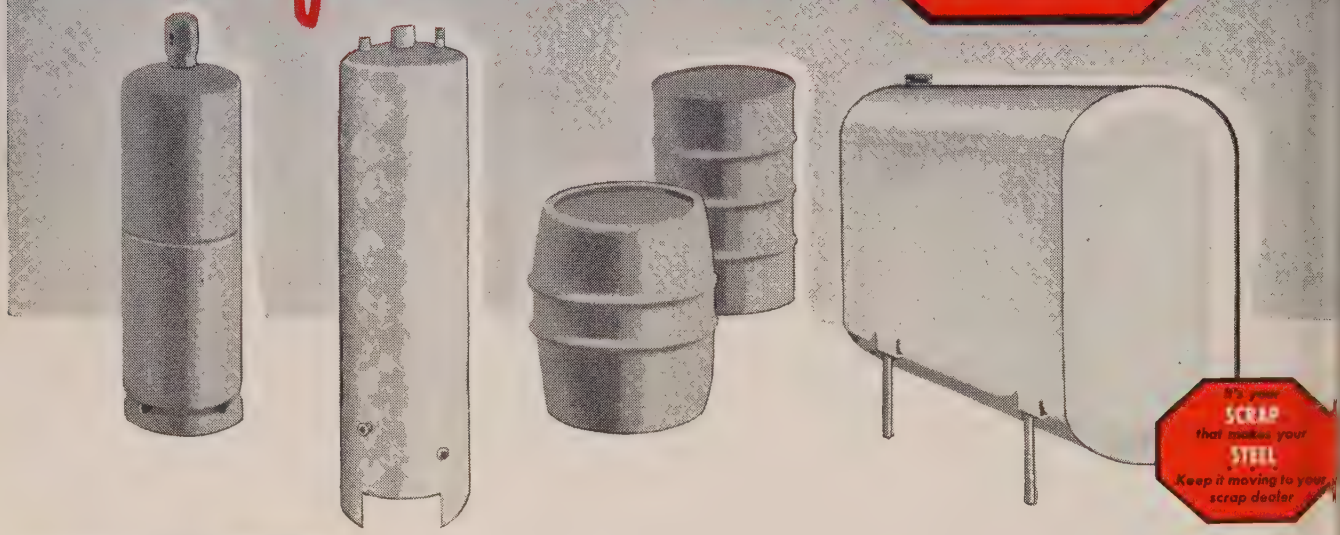
Even the highly efficient rotary gas engines, natural gas-powered diesels and the coal-burning power plants of the U. S. at maximum efficiency can't approach that cost. Various estimates place U. S. aluminum power costs in the range of 4 to 7 cents per pound of aluminum produced.

Across the Border—Alcan's ingot in the U. S. market is defended vigorously by independent fabricators as a counterbalance to Alcoa, Reynolds and Kaiser, who compete with them in the mill-products market. With production costs in its favor, Alcan has little difficulty in absorbing the duty of 1½ cents per pound levied on aluminum crossing the border for sale by Aluminium Ltd's western hemisphere distributor, Aluminum Import Corp. On the other hand, if it cut prices, it would risk a tariff rise that would absorb the differential completely.

Canada's aluminum has been spurned by the U. S. government, which won't sign a long-term market guarantee Alcan feels necessary for Kitimat's expansion. But the Aluminium Ltd. subsidiary, by pressing its natural power advantages, has staked a strong claim on world aluminum markets.



Containers have LONGER LIFE LIGHTER WEIGHT when fabricated with N-A-X HIGH-TENSILE STEEL



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N-A-X HIGH-TENSILE STEEL
... And "MAKE YOUR PRODUCT LAST LONGER"

Containers and pressure vessels assure greater service when made of N-A-X HIGH-TENSILE steel. The durability of this low-alloy steel, its greater resistance to corrosion and abrasion, and its exceptional fabricating and welding qualities are important characteristics. The greater strength of N-A-X HIGH-TENSILE steel permits fabrication of containers from thinner sections—reducing costly deadweight to a minimum. If you are interested in effecting economies in barrels, drums or cylinders, investigate N-A-X HIGH-TENSILE steel.

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NATIONAL STEEL CORPORATION

NATIONAL STEEL

H. C. TUTTLE Detroit Editor

Mirrors of Motordom

New models won't be ready for the public until November at the earliest, but advance indications point to many changes, particularly for Chrysler cars

DETROIT

UTOMAKERS are now in a last-minute rush to finalize details bout their 1953 models prepara-ory to showing the first hand-uilts to dealer groups and the ress.

Public introduction is still sev-ral months away for virtually all he new models. November will robably be the earliest that a ma-or maker puts its new wares on dis-lay, and the bulk of the offerings von't come until late December nd January. Plant shutdown plans or model changeovers are not com-letely determined because of the teel strike's effects and the de-ire to try to recoup some lost 952-model run volume.

Coming Up—Although the cus-omary tight-lipped attitude to-ard new models prevails in the ndustry these general trends are learly distinguishable: Greater ower, wider use of work-saving evices; new electrical system; older styling with less ginger-read.

These add up to a year in which nore companies will make more najor changes than any single past ear. Some changes would have een made in the '52 models if ompetitive and world conditions ould have been predicted with nore certainty. Some changes hich companies would like to be ble to make this year, mostly in ngine design, will have to wait ntil tooling is more readily avail-ble. But there will be more new ngines and more new bodies, plus very liberal dash of mechanical nd electrical innovations and adgetry, than at any previous ime.

Highlights — The following are ome of the major changes for each ar make:

Chrysler Corp. as a total organ-zation will be making the big style ews for 1953. Plymouth, Dodge, eSoto and Chrysler, it appears, will have completely new bodies. The corporation's traditional conservatism in styling has been roundly criticized by some members of the dealer organization and a little more daring without sacrificing the commendable points of the present design is indicated. Dodge will have a somewhat smaller version of the Chrysler and DeSoto V-8 engines, making use of the hemispherical combustion chamber design and operating on regular-grade gas. Plymouth, the potential remaining candidate for this engine, will probably coast without it in 1953, but in all likelihood will get a torque converter along the lines of the unit in De Soto and the Chrysler six.

Auto, Truck Output

U. S. and Canada

	1952	1951
January	409,406	645,688
February	467,691	658,918
March	517,207	792,550
April	576,505	680,281
May	546,674	695,898
June	560,952	653,682
July	227,460	522,858
August		571,442
September		505,758
October		558,971
November		480,199
December		402,729
Total		7,179,161
Week Ended	1952	1951
July 12	70,592	117,747
July 19	32,442	131,419
July 26	42,514	131,598
Aug. 2	22,148	117,010
Aug. 9	44,352	97,351
Aug. 16	32,000*	129,661

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary.

General Motors Corp.'s divisions will, as usual, go their separate ways. Chevrolet will make the biggest pitch, trying to make mockery of Ford's "Beat Chevrolet" battlecry. Rumors about Chevrolet flourish, the most interesting being that a new V-8 will be presented and that power steering will be standard equipment. The engine is in the works but it now looks beyond realization in the next model because of machine tool problems. A better bet is that the higher-powered six now used for Power-Glide cars will be standard. Power steering on a free basis appears improbable. Pontiac also may sport a new body, and the Chevrolet situation with respect to a new engine also seems to apply. A V-8 is being readied but whether it can make its debut for '53 is in doubt. This division may take a flier on a small Allison torque converter, in preference to Hydra-matic. Buick, again emphasizing its most luxurious model—the Roadmaster—will introduce a high-powered V-8 overhead valve engine. Power steering may be offered in the low-cost Special. Power brakes are looked for in Supers and Roadmasters. Body redesign is possible. Oldsmobile and Cadillac will probably up their compression ratios and give their horsepowers boosts in the process. Twelve-volt electrical systems are likely in these two cars and new electrical appurtenances are possible. Air conditioning will be offered. Power brakes are probable. Oldsmobile Super and Deluxe 88's may undergo body changes, the 98 probably will have a working-over of its body trim.

Ford Motor Co. shot its styling wad in this year's models, but the Ford Eight and Mercury will have new high-powered overhead valve V-8 engines. One curb-side opinion is that the Ford's horsepower will be 145. To permit air entrance, Mercury may open up the now-dummy scoop under the hood ornament, a la V-8 DeSoto. Lincoln, with new body and new engine in 1952, probably will hold to minor engineering changes, although not without significance is its probable use of tubeless tires. Power brakes may make their debut, as may power steering.

Among the independents the plans are better hidden. Outstanding new model for this group should be **Hudson's** new compact car, utilizing the "stepdown" design and one-piece frame and body

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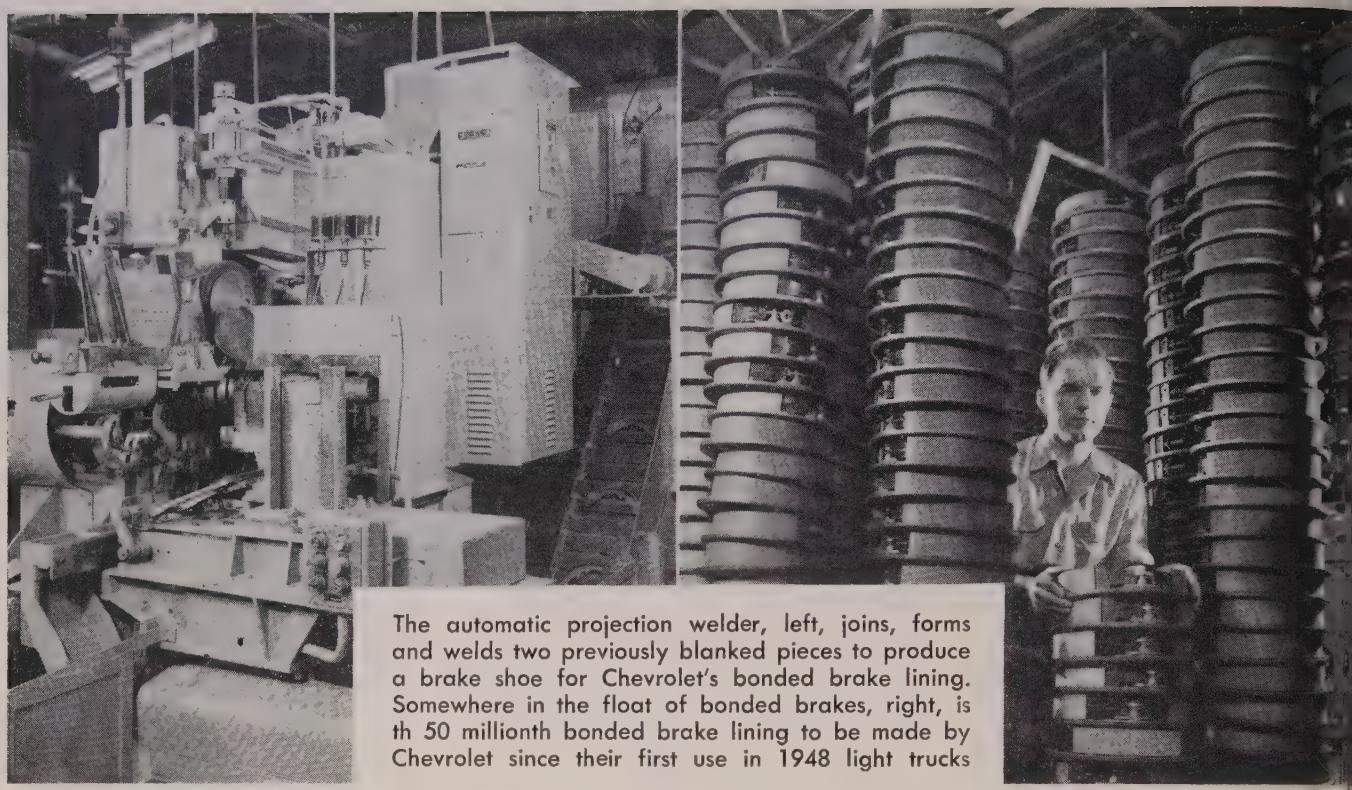

The automatic projection welder, left, joins, forms and welds two previously blanked pieces to produce a brake shoe for Chevrolet's bonded brake lining. Somewhere in the float of bonded brakes, right, is th 50 millionth bonded brake lining to be made by Chevrolet since their first use in 1948 light trucks

construction. A relatively high powered six-cylinder engine should make this a nimble performer. Styling changes will be evident in other Hudson models.

Packard is saving its big body and engine changes for 1954, but next year will introduce a new design of power steering and will have numerous other engineering changes. Emphasis will be on the most luxurious "400" series.

Nash, having brought out a completely new body this year, will be content with facelifting its Statesman and Ambassador models, but may distinguish the Rambler with styling changes.

Kaiser-Frazer would like to introduce additional body types to the Kaisers, a hard-top particularly being desired. It has been engineered and may show up. An increase in the Henry J's power plant is likely.

Studebaker, having significantly changed its front-end design in the current model, might be content to let its changes be minor, but in celebration of its 100th anniversary it may make body changes.

Willys Aero series of cars, using an entirely new body this year and humming along with its present engines, may ride on the crest of a new-found popularity in the passenger car field, with only moderate modifications in trim and detail.

Bonded Brake Linings Pay Off

Such a little-thought-of and rarely seen automotive component as the brake shoe can be a dramatic item. Chevrolet proves this by the disclosure that it spent ten years and $1 million to develop its present bonded lining and to re-equip a plant for its manufacture. Since introduction — in 1948 on light trucks, and in 1949 standardization on this type of lining for passenger cars—Chevrolet has turned out 50 million of these units, enough for almost 6.5 million vehicles.

Chevrolet gear and axle plant in Detroit has contributed 85 per cent of that number, the manufacturing process consisting of stamping out the shoe's parts, welding them together, bonding the lining material on, and assembling into completed brakes. Many of these operations are automatic, done on special purpose machinery.

With millions of Chevrolets on the road equipped with prebonded lining, the replacement market for the non-riveted unit has had some unusual aspects. Chevrolet determined to capture a good chunk of the lining replacement business and set up a policy of exchanging bonded lining for riveted lining. This interest in the replacement field is paying off. Whereas formerly an owner might take his Chevrolet to other than a dealer for a brake reline job, sales of replacement linings are now running double the rate of two years ago even though Chevrolet durability tests have shown that the new lining has a useful life of about double the riveted construction. In dealerships where both types of lining are sold, less than 15 per cent of same are of the riveted variety and in Chevrolet's over-all replacement volume 97 per cent is of the new type.

New Packard Vice Presidents

First evidence of the more aggressive procurement policy Packard Motor Car Co. (STEEL Aug. 4, p. 75) is the appointment as vice president of Albert H. Behnke, a 20-year Hotpoint veteran and reportedly a genius at rounding up steel when there is little to be had. His will be a top-level liaison job in the auto company's dealings with the metals industry.

New emphasis is also placed by Packard on its industrial relations department with the elevation of vice president of C. Wayne Brownell, manager of this department.

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"Bill, making or losing money today can depend on

The Turn of a Screw!"

"Stop pulling my leg," Bill retorted skeptically.

"I'm not exaggerating. You can't afford to take your fasteners for granted," Bob insisted. *"I'm saving time—and time is money—just by following the RB&W man's suggestion to use another kind of screw in my TV sets."*

"What kind?" asked Bill.

"RB&W's new SPIN-LOCK Screw," answered Bob. *"It has a patented feature—ratchet-like teeth under the head—that not only locks into the surface and holds tighter, but also speeds assembly. It does away with extra parts and special handling. Bet your switches could use 'em, Bill."*

MORAL: Look to your fasteners for an often overlooked opportunity to reduce costs, and strengthen your competitive position. New fasteners may prove more efficie than the ones you're now using. you may save by the stepped- production you get from using t finest fasteners . . . RB&W bol nuts, rivets and screws of unifor accuracy, dependability and phy cal properties.

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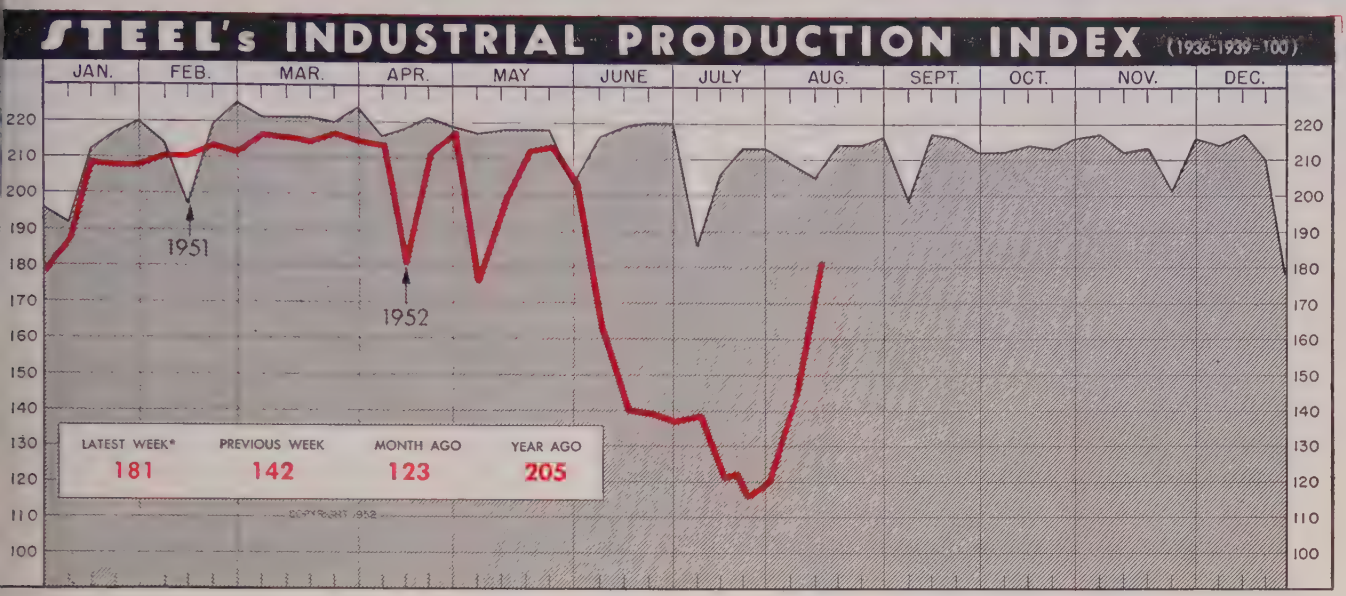
RB&W 107 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRON


STEEL's INDUSTRIAL PRODUCTION INDEX (1936-1939=100)
JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.
220 210 200 190 180 170 160 150 140 130 120 110 100
1951
1952
LATEST WEEK* 181
PREVIOUS WEEK 142
MONTH AGO 123
YEAR AGO 205

*Week ended Aug. 9

Based upon and weighted as follows: Steelworks Operations 35%; Electric Power Output 23%; Freight Car Loadings 22%; and Automobile Assemblies (Ward's Reports) 20%.

Many producers of consumer durables may find strong competition ahead as cost-of-living rises. Industrial activity index jumps as steel output rises

BUSINESS soon may find itself farther down the road of increased defense orders and lagging civilian demand.

Right now, producers of both defense and consumer durables are striving to regain production lost by the steel strike. Total inventories of durables slid $1.1 billion to $54.6 billion in June, reports the Commerce Department. A far greater drop probably occurred in July, as many metalworking companies used up the last of their steel supplies. But when these civilian companies recover their lost production, what next?

Markups — Omens pointing to tougher days ahead are arising. Prices of steel products will be considerably higher in the months ahead. Add to these markups the jump in food prices resulting from crop failures, and the customer may will be faced with a large increase in the cost of living. It is quite probable he may be in a position to buy little more than absolute necessities.

Wages lost during the steel strike will be felt for some time. It will take the steelworker about two years to regain lost pay, while wage losses of workers laid off by the steel shortage are, in themselves, substantial.

Index—As industry made strides toward recovery from effects of the steel strike, STEEL's industrial activity index soared 39 points to 181 per cent of the 1936-1939 average in the week ended Aug. 9. This compares with a reading of 123 per cent a month previous and 213 per cent in the week before the strike. Steel production rose to 85 per cent of capacity, or more than double the previous week's production. Automotive production also rose substantially, while electric power generation and freight car loadings increased slightly in the week ended Aug. 9.

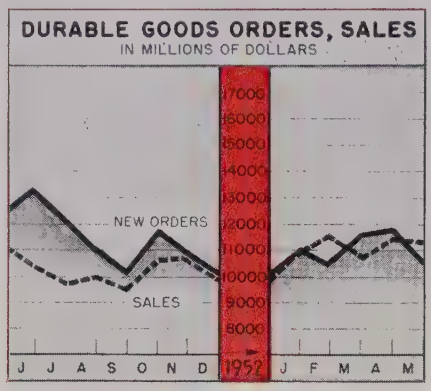
Steel Output Jumps . . .

Continuing its return to normal operations, the nation's mills produced 1,981,000 net tons of steel for ingots and castings in the week ended Aug. 16, estimates the American Iron & Steel Institute. This compares with a turnout of 1,866,000 net tons in the previous week. Production in the same week a month previous was only 316,000 net tons. In the last full week before the strike, output reached 2,021,000 net tons of steel.

Bright Outlook for Autos . . .

The automotive industry may turn out nearly 5 million passenger cars and 1 million trucks in 1953. That's the goal the industry is setting, says *Ward's Automotive Reports*. Reason for this is that new designs are expected to push consumer demand considerably, while materials become increasingly available to the industry. Many automakers, says *Ward's*, believe that steel is likely to pour in with such abundance by next April that a quick decontrol of the metal is likely. Decontrol may also take place for copper, lead and zinc. Thus car and truck volume could really roll. This year, however, auto-truck output will probably not greatly exceed 4 million units.

Right now, automotive output is climbing from the six-year low production level resulting from the steel shortage. U. S. and Canadian plants rolled 44,352 passenger cars and trucks off the assembly lines in the week ended Aug. 9. This is double the 22,148 assemblies produced in the previous week, but substantially under output in the same week last year when U. S. and Canadian auto-truck produc-

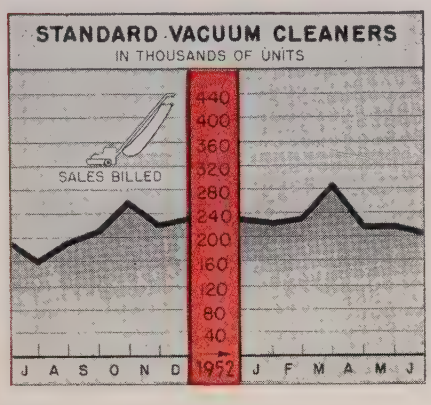


Durable Goods Orders, Sales

In Millions of Dollars

	New Orders		Sales*	
	1952	1951	1952	1951
Jan.	11,287	15,050	10,941	10,430
Feb.	10,876	13,474	11,493	10,390
Mar.	11,712	15,542	10,743	10,851
Apr.	11,893	12,987	11,407	10,739
May	10,650	12,406	11,345	11,150
June	.....	13,257	.....	10,383
July	.....	12,235	.....	9,666
Aug.	.....	11,032	.....	10,028
Sept.	.....	10,344	.....	9,508
Oct.	.....	11,956	.....	10,660
Nov.	.....	11,031	.....	10,732
Dec.	.....	10,312	.....	9,786

*Seasonally adjusted. U. S. Office of Business Economics.

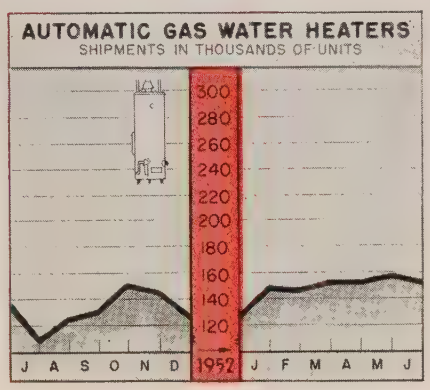


Standard Vacuum Cleaners

Sales Billed—Units

	1952	1951	1950
Jan.	223,357	282,305	249,150
Feb.	230,226	261,572	263,515
Mar.	290,092	290,242	361,014
Apr.	217,169	227,216	292,664
May	216,969	201,983	278,645
June	206,939	194,548	250,190
July	.....	161,002	279,967
Aug.	.....	191,299	341,232
Sept.	.....	210,086	327,524
Oct.	.....	259,469	331,445
Nov.	.....	219,919	265,310
Dec.	.....	230,263	288,756
Total	.....	2,729,104	3,529,414

Vacuum Cleaner Mfrs. Assn.

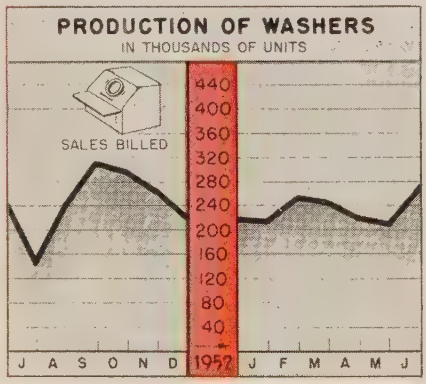


Automatic Gas Water Heaters

Shipments in Units

	1952	1951	1950
Jan.	148,700	225,600	131,600
Feb.	145,800	213,400	156,500
Mar.	153,300	223,300	172,800
Apr.	153,300	199,400	176,400
May	159,300	167,400	195,200
June	153,100	131,500	207,100
July	.....	102,400	197,500
Aug.	.....	124,400	259,800
Sept.	.....	130,900	222,600
Oct.	.....	148,800	235,100
Nov.	.....	143,400	206,000
Dec.	.....	127,200	202,500
Total	.....	1,931,200	2,363,100

Gas Appliance Mfrs. Assn.



Household Washers

Sales Billed—Units

	1952	1951	1950
Jan.	213,998	321,092	275,576
Feb.	255,864	341,328	342,967
Mar.	248,431	368,455	423,802
Apr.	217,211	292,193	333,072
May	213,668	253,942	304,640
June	274,457	253,119	325,217
July	.....	139,779	282,261
Aug.	.....	239,081	381,452
Sept.	.....	313,756	424,043
Oct.	.....	297,210	439,924
Nov.	.....	262,484	379,964
Dec.	.....	218,664	377,013
Totals	.....	3,301,123	4,289,931

American Home Laundry Mfrs. Assn.

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Issue Dates on other FACTS and FIGURES Published by STEEL

Construction .....July 21	Gray Iron Castings..Aug. 11	Radio, TV .....July 21
Employ. Metalwkg. Aug. 4	Indus. Production ..July 14	Refrigerators .....July 28
Employ., Steel ....Apr. 28	Ironers .....July 7	Ranges, Elec. .....July 28
Fab. Struc. Steel ..July 21	Machine Tools .....July 14	Ranges, Gas .....July 28
Foundry Equip. ...July 21	Malleable Castings..Aug. 11	Steel Castings .....Aug. 11
Freight Cars .....July 14	Pumps .....July 28	Steel Forgings ....Aug. 11
Furnaces .....July 7	Prices, Consumer ..Aug. 4	Steel Shipments ...June 23
Gear Sales .....July 14	Prices, Wholesale ..Aug. 4	Wages, Metalwkg. .Aug. 4

tion totaled 97,352 passenger cars and trucks.

More Slack in Coal . . .

As John L. Lewis notified bi-tuminous coal operators that wage agreements will expire on Sept. 30, production of bituminous coal con-tinued substantially under last year's turnout. In the week ended Aug. 2, 8,350,000 net tons of bi-tuminous were produced, compared with 6,700,000 tons in the previous week and 9,949,000 tons in the week ended Aug. 4, 1951, says the U. S. Bureau of Mines. Cumulative output between Jan. 1 and Aug. 2, 1952, totaled about 269.6 million net tons, or 12 per cent under the 305.6 million tons produced in the like period in 1951.

Car Loadings Heavier . . .

More freight cars are being loaded, sealed and sent on their way, now that the steel strike is over. Car loadings reached 732,920 cars in the week ended Aug. 2, reports the Association of American Railroads. That's an increase of 20 per cent from the previous week, but a drop of 10 per cent from the comparable week, 1951.

Reflecting, for the most part, the impact of the steel strike, Class I railroads in the Eastern district of the U. S. lost $51 million in freight revenues in June. Estimated net income after interest and rentals totaled about $10 million that month, compared with $20 million in June, 1951.

More Shock in Power . . .

Electric power generation is still maintaining its lead over output last year. Electric energy produced in May totaled 31.8 billion kwhrs, nearly 6.5 per cent above output in May, 1951, reports Edison Electric Institute. Electric energy sales to residential users increased 12 per cent over the year and industrial users bought 6.4 per cent more electricity. In the week ended Aug. 2, the electric power industry distributed 7405 million kwhrs, an increase of 5.7 per cent over the same week, 1951. All areas showed substantial increases over the amount of energy used during the same period last year, except the central industrial region which fell

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	85.0	42.0	102.0
Electric Power Distributed (million kwhr)	7,495	7,405	7,070
Bituminous Coal Output (daily av.—1000 tons)	1,393	1,117	1,658
Petroleum Production (daily av.—1000 bbl)	6,266	6,132	7,164
Construction Volume (ENR—millions)	$253.1	$113.2	$216.9
Automobile, Truck Output (Ward's—units)	42,352	22,148	97,352
TRADE			
Freight Car Loadings (unit—1000 cars)	740[1]	733	809
Business Failures (Dun & Bradstreet, number)	140[1]	152	149
Currency in Circulation (millions)[3]	$29,041	$28,952	$27,904
Dept. Store Sales (changes from year ago)[3]	−2%	−2%	−8%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$16,314	$15,908	$14,656
Federal Gross Debt (billions)	$262.9	$263.0	$255.6
Bond Volume, NYSE (millions)	$15.8	$14.7	$11.9
Stocks Sales, NYSE (thousands of shares)	5,506	5,552	7,580
Loans and Investments (billions)[4]	$76.1	$76.2	$70.1
United States Gov't. Obligations Held (billions)[4]	$33.3	$33.3	$31.0
PRICES			
STEEL's Weighted Finished Steel Price Index[5]	171.92	171.92	171.92
STEEL's Nonferrous Metal Price Index[6]	222.1	224.6	224.6
All Commodities[7]	111.8	111.7	115.0
All Commodities Other Than Farm and Foods[7]	112.7	112.5	116.6

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1951, 1,999,035; 1952, 2,077,040. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

1.7 per cent under the year ago output, as production was downed by the steel shortage.

Store Sales Slip . . .

High temperatures, radio and television coverage of the political conventions and the steel strike brought department store sales down in July. The Federal Reserve Board's index of department store sales dropped 6 points to 105 per cent of the 1947-1949 average that month. Considerably below sales in the same period last year were the New York, Chicago, Richmond, Va., and St. Louis areas.

Steel Barrels Hit . . .

Shipments of steel barrels plunged 21 per cent to 2.4 million units in June, compared with 3.0 million units in May and 3.7 million units shipped during June, 1951. During the first six months of 1952, monthly shipments averaged 2.9 million units, compared with a monthly average of 3.6 million units in the first six months, 1951.

Shipments of steel packages, kegs and pails dropped to 4.8 million units in June, compared with 5.6 million units in May and 7.3 million units shipped during June, last year. Average monthly shipments during the first half of 1952 were 5.1 million units, compared with 6.8 million units in the same period last year.

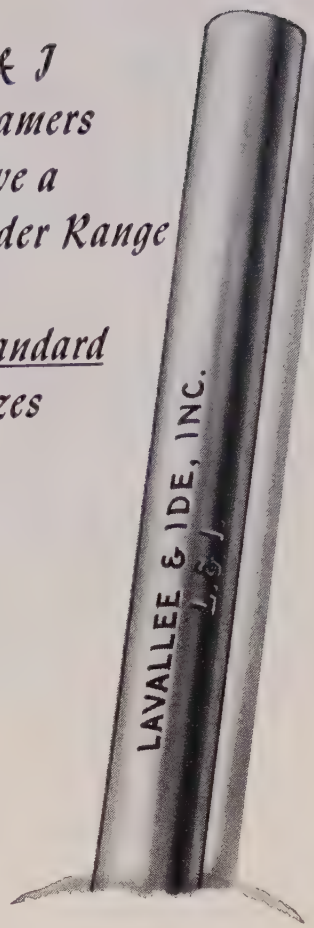
Construction Activity Slackens

As shipments of structural steel fall beneath last year, the construction boom slackens. Contract awards for heavy construction totaled $253.1 million in the week ended Aug. 7, says *Engineering News-Record*. That's a decline of 13 per cent below the average week to date. Public housing suffered the greatest downward sweep of the week by falling 97 per cent off the average week to date. Industrial construction dropped 50 per cent while private housing rose 7 per cent above the average 1952 week in the week ended Aug. 7.

Trends Fore and Aft . . .

Loans to metalworking companies dropped $37 million in the week ended Aug. 6 . . . Consumers' prices in June were up 11.5 per cent since Korea . . . May shipments of all major types of heating equipment were over shipments in April . . . Factory shipments of farm pumps rose 8 per cent in June. . . . Bank clearings in July rose 5.9 per cent above transactions during June, 1951.

L & J Reamers have a Wider Range of Standard Sizes



Large Sizes
TO 1½"

Small Sizes
TO .040

L&I
The Reamer Specialists
LAVALLEE & IDE, INC.
CHICOPEE, MASS.

If you're using high-priced quenching oils

YOU'RE PROBABLY WASTING MONEY!

Verified reports from a great many heat-treating plants prove conclusively that they have saved money by switching from an expensive quenching oil to a Sun Quenching Oil. In every instance these plants have maintained—or surpassed—their standards of quality through the use of Sun's specially refined naphthenic quenching oils.

These are facts—not idle boasts. If you would like to see field reports giving the details of these plants' quenching operations, and the benefits they obtain, fill in the coupon below.

Sun Quenching Oils can handle 95 percent of all quenching jobs

Dept. S-8

SUN OIL COMPANY, Phila. 3, Pa.

Perhaps I *am* paying too much for quenching oil. ☐ I'd like a Sun Representative to show me field reports of other companies' experience with Sun Quenching Oils. ☐ Please send me the informative booklet "Sun Quenching Oils."

Name_____

Title_____

Company_____

Address_____

City_____ Zone_____ State_____

1 They cost less. You save on the purchase price.

2 They have low drag-out. When heated they thin out more than paraffinic oils, draining off parts more rapidly. You reduce your operating costs.

3 They keep systems clean. Because of their natural detergency, the tank and system stay clean. Coolers keep operating at peak efficiency.

4 They have long life. Sun Quenching Oils do not thicken up in service, and under normal operating conditions, they need never be replaced.

5 They assure a uniform rate of cooling. These oils have excellent metal-wetting characteristics. They do not lose quenching speed after extended use.

SUN INDUSTRIAL PRODUCTS

SUN OIL COMPANY, PHILADELPHIA 3, PA. • SUN OIL COMPANY, LTD., TORONTO AND MONTREAL

SUNOCO®

HORACE A. DEANE
. . . a V. P., Campbell, Wyant & Cannon

JOHN R. GILMARTIN
. . . GM division gen. sales mgr.

J. MURRAY JOHNSTON
. . . National Lead Co. division mgr.

Campbell, Wyant and Cannon Foundry Co., Muskegon, Mich., elected **Horace A. Deane** a vice president. Mr. Deane formerly was operating vice president of Brake Shoe & Castings Division, American Brake Shoe Co., New York.

Executive vice president of Michigan Limestone Division of **United States Steel Co.** is **Hugh Sutherland Lewis.** This division has plants in Rogers City, Mich.; Buffalo, N. Y.; Conneaut, O.; Boyers, East Brady, Worthington, Hillsville and Hershey, Pa.; and Millville, W. Va. Mr. Lewis resides in Birmingham, Mich.

William Rogers Herod was elected vice president of **General Electric Co.,** Schenectady, N. Y., and will continue as president of International General Electric Co., New York, which he has headed since 1945, and which was merged with and became a division of General Electric Co. on July 31. IGE had been a wholly owned affiliate of General Electric since 1919.

General manager of **Allegheny Industrial Electrical Co.,** Pittsburgh, is **Nixon A. Brewer.** Mr. Brewer succeeds **Henry B. Lee III,** who has resigned.

John R. Gilmartin was appointed general sales manager of Hyatt Bearings Division, **General Motors Corp.,** Detroit. He succeeds **Howard K. Porter,** who was named assistant to the general manager on special assignment.

Robert F. Nelson was elected president and general manager of **Lanston Monotype Machine Co.,** Philadelphia. Mr. Nelson was formerly executive vice president of American Type Founders, Elizabeth, N. J.

Manager of the Air-Arm Division of **Westinghouse Electric Corp.,** Baltimore, Md., is **Rear Adm. Martin P. Hottel, USN (Ret.).**

Russel R. Morgan, vice president in charge of Cleveland Rock Drill division of **Le Roi Co.,** Milwaukee, was elected to the board of directors. **Norman J. Kimber** was promoted to assistant works manager.

C. L. Peterson was appointed general sales manager of the Industrial Division of **Minneapolis-Honeywell Regulator Co.,** Minneapolis. Mr. Peterson formerly was regional manager for the midwest region of the company in Chicago. He succeeds **W. H. Steinkamp.**

National Lead Co., New York, appointed **J. Murray Johnston** manager of its Titanium Alloy Mfg. Division. Mr. Johnston succeeds **Winthrop Sargent Jr.** who continues as a director of the parent company.

Perfection Stove Co., Cleveland, appointed **H. C. Erhard** sales manager of its contract sales department. Assistant sales manager of the department is **H. E. Thomas.**

Continental Can Co. appointed **R. S. Hatfield** general manager of the Metal Division's north-central district, including Chicago, Milwaukee and Minneapolis, and **Frank I. Gill** general manager of the division's midcentral district, which includes Chicago, Cincinnati and Des Moines, Iowa.

J. D. Nicholson was made a vice president of **Kelley-How-Thomson Co.,** Duluth, Minn. Mr. Nicholson is in charge of the Industrial Division of the company.

John R. Morrill is now a partner and general manager of **Gibson Welding Supplies** and **Inland Oxy-Acetylene Co. Inc.,** Spokane, Wash. Mr. Morrill was a sales executive of Lincoln Electric Co., Cleveland,

G. F. GOETZINGER
. . . V. P.-treasurer, U. S. Steel div.

PETER C. PIANTA
. . . plant supt., U. S. Steel div.

for eleven years, and for the past two years has been vice president of Baker Raulang Co., Cleveland.

G. F. Goetzinger was appointed vice president-treasurer of the Oil Well Supply Division of **United States Steel Co.,** Dallas. Mr. Goetzinger has served as treasurer and general credit manager of the division since 1946.

Phelps Dodge Refining Corp., New York, appointed **Howard Barkell** assistant vice president. He was formerly works manager of their Laurel Hill, Long Island, N. Y., plant. **D. L. Watts** and **S. W. Richardson** are now acting works manager and assistant works manager, respectively, at the Laurel Hill plant.

Reginald H. Line will be president of **Kelvinator of Canada Ltd.** effective Sept. 30, succeeding **Charles W. Hadden** who is retiring. Mr. Line has been general manager of Frigidaire Division, General Motors Corp., London, England, for the last nine years.

R. B. Steinmetz was appointed vice president in charge of manufacturing operations and **L. R. Love** vice president in charge of sales of **Anaconda Wire & Cable Co.,** New York. Mr. Steinmetz was formerly general manager of mills, and Mr. Love, general sales manager. **D. E. Allen** succeeds Mr. Love as general sales manager.

Peter C. Pianta was appointed plant superintendent of United States Steel Products Division, **United States Steel Co.,** Los Angeles, Calif., succeeding **Charles L. Ficker,** who became vice president-operations of this division.

General manager of **Amgears Inc.,** Chicago, is **Lawrence J. Kline,** formerly general manager of Automatic Transportation Co., Chicago, division of Yale & Towne Mfg. Co. Amgears is a subsidiary of Hupp Corp., Chicago.

Thomas J. Wood was appointed operating assistant to the president of Brake Shoe & Castings Division, **American Brake Shoe Co.,** New York, and **Raymond A. Frick** was appointed general works manager of the division.

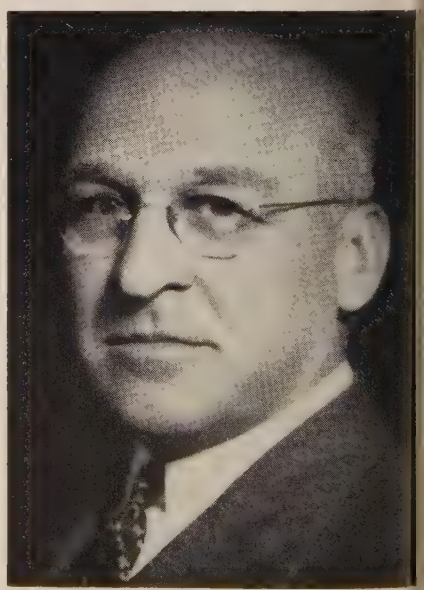
Taylor Milton was appointed vice president of **Walter Kidde Constructors Inc.,** engineer and builder New York. Mr. Milton has been vice president and chief engineer of Walter Kidde Engineer-Southwest Inc., a subsidiary with headquarters in Houston, and will continue in this capacity in addition to his new duties.

Byron G. MacNabb joined the Research & Development staff of **Alloy Engineering & Casting Co.,** Champaign, Ill., as associate director. He was formerly assistant to the director of research, Pullman Standard Car Mfg. Co., Hammond, Ind.

Frank H. Miller was elected vice president of **David J. Joseph Co.,** Cincinnati. Mr. Miller will be in charge of the foundry division.

Clark Controller Co., Cleveland, announces the following appointments: **Robert Whitehill** is now assistant general sales manager; **John D. Puette,** Cleveland district manager; **L. H. McClure,** manager of marketing; **W. J. Bergen,** assistant manager of merchandising; **S. Siegel,** in charge of advertising and sales promotion in the Marketing Department; **W. R. Heckman,** district application engineer.

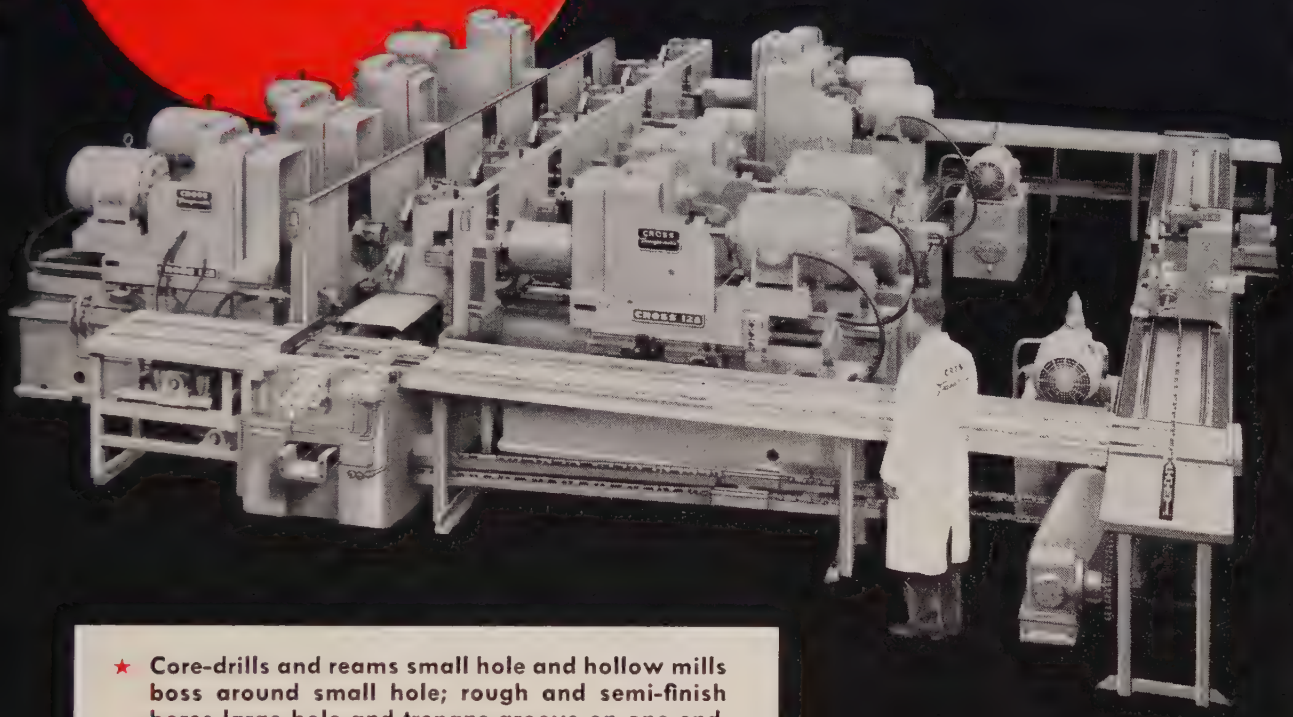
R. B. STEINMETZ
. . . V. P.-mfg. operations, Anaconda



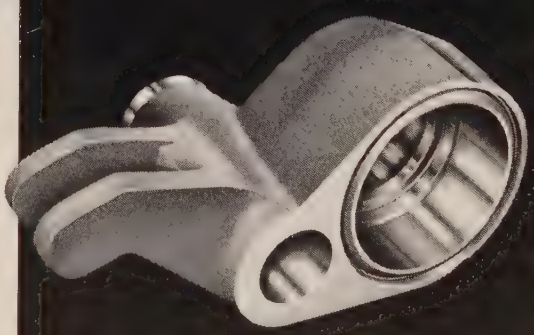
L. R. LOVE
. . . V. P.-sales, Anaconda

Bores, Hollow Mills and Trepans Tank Idler Arms

Another Transfer-matic by Cross



- ★ Core-drills and reams small hole and hollow mills boss around small hole; rough and semi-finish bores large hole and trepans groove on one end.
- ★ Cast Armor material—Rockwell C-36.
- ★ Six and one-half pieces per hour at 100% efficiency.
- ★ Six stations—one for loading, five for machining—with automatic transfer from station to station.
- ★ Palletized work holding fixtures hold part securely for all operations with integral conveyor returning fixtures from last station to loading station.
- ★ J.I.C. standard electrical and hydraulic construction with stranded wire.
- ★ Pre-set tools and Cross Cutter-Drive reduces downtime.



Established 1898

THE CROSS CO.

DETROIT 7, MICHIGAN

Special MACHINE TOOLS

and **W. A. Kreuger** will handle merchandising sales—all these being in the Cleveland district. **W. J. Backus** will take over the Akron office, replacing Mr. Heckman.

Arnold R. Finch was elected vice president in charge of engineering and manufacturing of **West Bend Aluminum Co.**, West Bend, Wis.

Elmer H. Lanthorn was appointed general sales manager of **Blackmer Pump Co.**, Grand Rapids, Mich. Mr. Lanthorn was previously associated with Peerless Pump Division of Food Machinery & Chemical Corp., San Jose, Calif., in engineering and sales management functions.

W. B. Johnson was appointed sales promotion manager of Norge Heat Division, **Borg-Warner Corp.**, Kalamazoo, Mich. Mr. Johnson was formerly advertising manager of heating equipment of Ingersoll Products Division of the same company.

Harry L. Smith Jr. was made staff manager-product sales for **Aluminum Co. of America**, Pittsburgh, and is succeeded as manager of sheet and plate sales by **W. T. Mitman.**

Richard M. Robinson was appointed purchasing agent of the Manufacturing Division, **Pacific Airmotive Corp.**, Burbank, Calif. Before joining this company, Mr. Robinson was purchasing agent of Anderson-O'Brien Co., Los Angeles.

JOSEPH A. VOSS JR.
. . . Kaiser Aluminum midwest sales mgr.

RUSSEL T. DRENNAN
. . . Kaiser Aluminum eastern sales mgr.

Kaiser Aluminum & Chemical Sales Inc., Akron, O., appointed **Russel T. Drennan** and **Joseph A. Voss Jr.** sales managers in eastern districts of its Chemical Division. Mr. Drennan will take charge of the territory along the Atlantic seaboard while Mr. Voss will have the midwest sales, including Pittsburgh, Cleveland, Detroit and Chicago.

Thomas W. Russell Jr. was appointed general purchasing agent of **American Brake Shoe Co.**, New York. He has been assistant general purchasing agent since 1950.

William H. Old is now director of purchasing of **Babcock & Wilcox Co.**, New York. He was formerly purchasing agent of American Brake Shoe Co., New York.

Pacific Airmotive Corp., Burbank, Calif., appointed **Roy Backman** sales manager-products and **George T. Keller** sales manager-maintenance.

George K. Cassady was appointed assistant general sales manager **Giddings & Lewis Machine Tool Co.**, Fond du Lac, Wis. He was assistant to the sales manager.

Floyd R. Ridgley was promoted to superintendent of **Temco Aircraft Corp.**, Dallas, Tex. Mr. Ridgley was formerly assistant superintendent.

OBITUARIES...

Irving C. Baker, 58, vice president, Airtemp division, **Chrysler Corp.**, Dayton, O., died Aug. 10.

R. B. Mildon, 74, former vice president of **Westinghouse Electric Corp.**, Pittsburgh, died Aug. 4 in New York.

E. W. (Pop) Cleveland, 62, vice president of **Cleveland Pneumatic Tool Co.**, Cleveland, and vice president and a director of **Electronic Research Corp.**, Cleveland, as well as part owner of **Aero Engineering Co.**, Berea, O., died Aug. 7 when his plane crashed near Seattle.

Frank L. Kocs, 39, president of **Enterprise Engineering Co.**, Milwaukee, died Aug. 3.

Raymond E. Stoltz, 62, general sales manager of **M. D. Knowlton Co.**, Brooklyn, N. Y., machinery manufacturers, died Aug. 7.

Frederick William Alger, 58, assistant vice president of **Pullman-Standard Car Mfg. Co.**, Chicago, died Aug. 3.

Marshall E. Beaman, 43, assistant general industrial relations manager for **Ford Motor Co.**, Detroit, died Aug. 7.

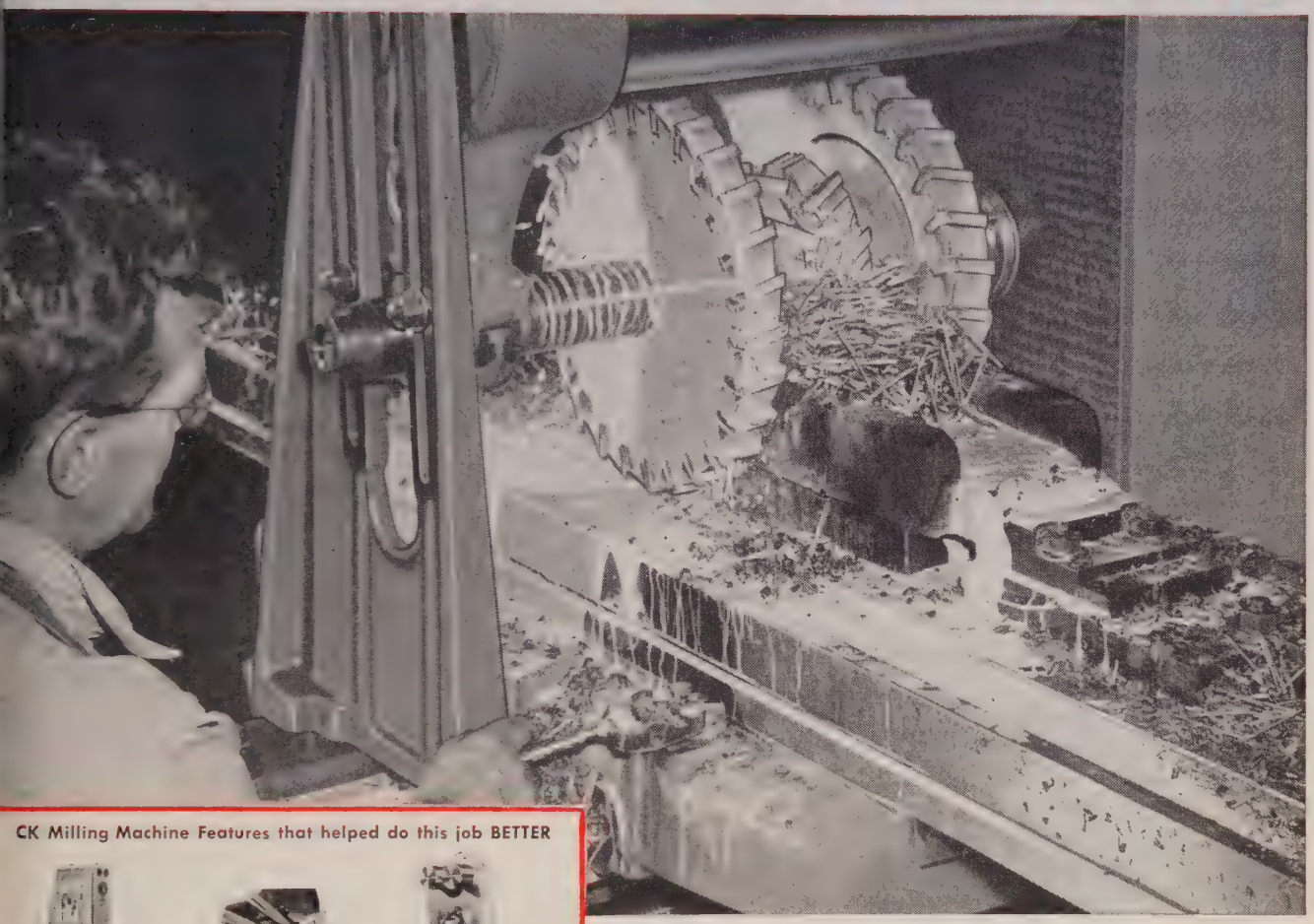
Herbert B. Lewis, 63, marketing service engineer, Market Development Department of **Lukens Steel Co.**, Coatesville, Pa., died Aug.

Eric McLean, 49, founder and chairman of the board of **Chapman Transmission Corp.**, Hornell, N. Y., died Aug. 3.

Henry F. Hellman, 57, former aircraft parts manufacturer, automobile dealer and inventor, died Aug. 8.

ACTS TELL THE STORY...

NEW KEARNEY & TRECKER CK MILLING MACHINE PAYS USER BIG PRODUCTION DIVIDEND

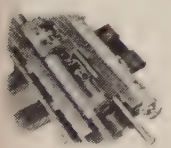


CK Milling Machine Features that helped do this job BETTER

New CK column easily absorbed vibration from heavy cutting load.

CK's large (2" dia.) screw and extra-long table feed nut permitted heavy cut.

No. 60 heavy-duty drive flange on spindle drives heavy-duty arbor with multiple cutters.



CK's positive, metered, pressure and automatic lubrication assured wear-free operation.

Greater Horsepower of CK machine meant maximum results from modern cutting tools.

CK's 3-bearing spindle and flywheel assured fastest metal removal with desired finish.

24 different spindle speeds (13 to 1300 rpm) plus 32 different table feeds (3/8" to 90 ipm) meant operator selected exact combination to get fullest advantage from high horsepower and modern cutting tools.

The FACTS on this job are:

Machine: New 25hp No. 5, Model CK Plain.
Material: Cast Steel, 150 Brinell.
Feed: 4½ inches per minute.
Cutter Speed: 100 Surface feet per minute.
Rate of metal removal: 17.5 cu. in. per min.
Production rate: 4 parts per hour.

NOTE: Each part requires but a *single pass* of the cutter on the new Kearney & Trecker CK machine.

Old production rate 1½ parts per hour with two passes required per piece.

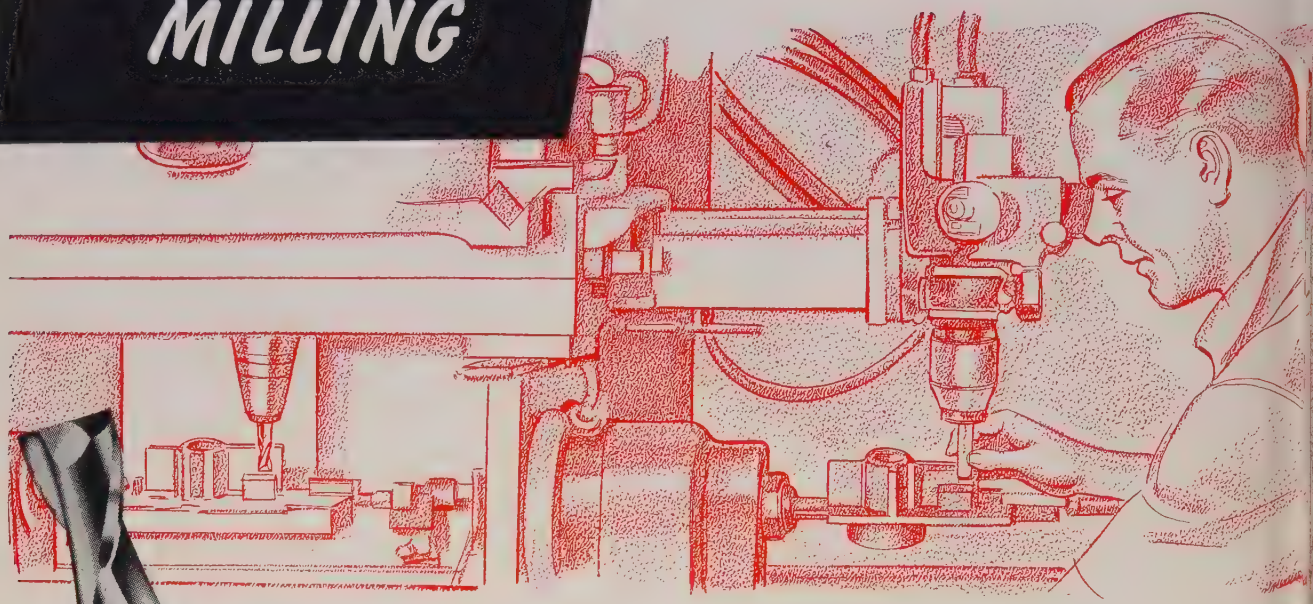
Investigate Kearney & Trecker's new CK line of milling machines. You'll find every feature is test and job-proven to give you cost-cutting results . . . greater machine capacity . . . greater productivity . . . better finished products. Contact your nearest Kearney & Trecker representative or write: Kearney & Trecker Corp., 6784 West National Avenue, Milwaukee 14, Wisconsin.

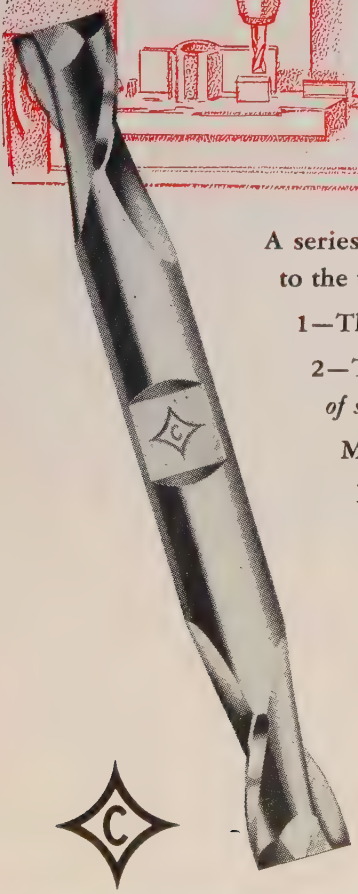
KEARNEY & TRECKER MILWAUKEE MACHINE TOOLS

Here's a tip on...

HIGH SPEED MILLING

WITHOUT LOSS OF SURFACE FINISH





A series of tests on a template follower job, illustrated above, proved conclusively to the user that ***Cleveland*** End Mills have two outstanding features:

1—They possess *unusual chip clearing ability.*

2—They permit the use of higher speeds and feeds than other mills *without loss of surface finish or tool life.*

More than two years ago the entire line of ***Cleveland*** End Mills was completely redesigned. Since that time they have been tested repeatedly in customers' plants—and always have been found superior in chip clearing, accuracy, strength, durability, long life and cutting speed. If *you* have not experienced the many advantages of these tools, we urge you to . . .

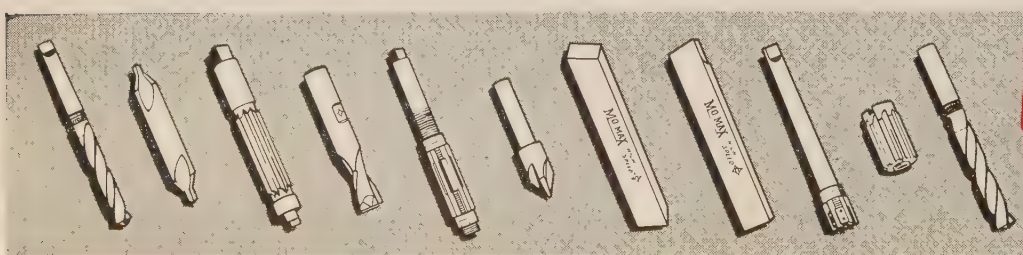
TELEPHONE YOUR INDUSTRIAL SUPPLY DISTRIBUTOR

THE CLEVELAND TWIST DRILL CO.

1242 East 49th Street • Cleveland 14, Ohio

Stockrooms: New York 7 • Detroit 2 • Chicago 6 • Dallas 2 • San Francisco 5 • Los Angeles 58

E. P. Barrus, Ltd., London W. 3, England



CLEVELAND DISTRIBUTORS EVERYWHERE are ready to serve you

ASK YOUR INDUSTRIAL SUPPLY DISTRIBUTOR FOR THESE AND OTHER *Cleveland* TOOLS

Production and Engineering
NEWS AT A GLANCE

STANDARDIZATION "UP IN THE AIR"—For seven years the aircraft industry tried. To date it is still unsuccessful in its efforts to obtain Bureau of Aeronautics recognition of the benefits and economies of standardizing the format of military airplane model specifications. The situation now, says Aircraft Industries Association, is at a point where it is obstructing the Munitions Board standardization effort on helicopters and guided missiles as well as aircraft. One manufacturer already has the unique task of providing helicopters to the Army with Bureau of Aeronautics paper work, and with Air Force approval of the model specification.

"BRAINS" NOW CHEAPER—Those "giant brains", the mechanical computers we've been hearing about that can remember thousands of words and calculate mathematical problems in milliseconds, now are in the reach of many plants. The latest "brain" unveiled by Electronic Computer Corp., New York, which has a controlled memory capacity of 120,400 nine-digit "words" and the ability to solve a 10-digit mathematical problem in 3 milliseconds, is relatively small in size, compared to the room-size computers that cost millions, and sells for $62,500. Designed for use by scientists and engineers in industrial research labs and for general business, the unit is to be mass-produced. It is expected to save industry countless dollars and hours in the computation of complex technical problems.

SPRAY BOOTHS THAT TRAVEL—Those attractive colored railroad pullmans you ride nowadays are painted by mobile spray booths at Pullman Co.'s Calumet and Buffalo shops. Two mobile units at each of the shops do the job. Each handles two cars. The "scaffolding" themselves, straddling each of the railroad tracks, are shaped like an inverted U. They are 18 feet high and 18 feet wide at the open part of the U, the two legs running on independent rails. A paint spray booth is included in each vertical member of the scaffolding. Both booths are raised or lowered within the "housing" by a touch of a pushbutton so any part of a railroad car can be reached by the painters on the booth platforms. Electric motors furnish the power for the booths' elevator motion as well as the movement of the entire scaffolding along its tracks.

MACHINING SHARPENS AIM—Some ticklish machining and delicate workmanship went into the production of the mechanical mounts for the twin 26-foot telescopes which Westinghouse recently successfully tested electronically at its Sunnyvale, Calif., plant. The mounts, designed for two of the largest, most powerful and accurate instruments ever devised to study the sun's corona, were machined and assembled by skilled workers to a precision within 0.0001-inch. Guiding mechanism of the instruments permits "drawing a bead" on the sun at 93 million miles, an accuracy equivalent to striking a rolling penny 13½ miles away with a rifle bullet. One of the gears that guides the 14 tons of rotating mechanism is only ¼-inch diameter. Construction of one of the instruments is sponsored by the Air Force, the other jointly by the Navy, Research Corp. and National Bureau of Standards.

MODIFIED "FLYING STOVEPIPE"—The Navy reports development of a pulse-jet engine of the type used in the so-called "flying stovepipe" of World War II, but with an operating life of 200 hours instead of 40 minutes. The engine is a relatively new type, without pistons, flywheels or a well defined combustion space. It is expected to find military use primarily in subsonic, expendable applications, although the Navy says it is not practicable at this time to predict all of its potential uses or even its ultimate capabilities.

"EDUCATED" EXTENSOMETER—Engineers at Battelle Memorial Institute have developed an extensometer that releases itself automatically from the test specimen before the breaking point is reached and without stopping the test. Breakaway feature, they say, is particularly useful in high temperature testing operations. In such operations the protection and insulation of the extensometer have been problems. Automatic release protects not only the extensometer but also supplementary indicating and recording mechanisms used in the test. Instrument is simple in construction and parts easily replaceable. License for its manufacture is yet to be issued.

METALWORKINGS—Basic principles and underlying laws governing the cutting and machining of metals are licking tough machining problems presented by new metals and alloys (p. 98) . . . One plant (p. 96) is "shooting" its way to safety. A camera "show 'em" technique is paying off; 1951 statistics prove it . . . Tiny stainless tubing for surgical and aircraft uses calls for many repetitive controls (p. 94). Specs go as low as 0.0005-inch tolerance on diameters . . . A "stitch in time" is saving more than nine for one concern (p. 102). A switch to metal stitching is saving 33 minutes . . . In the Philippines war surplus scrap is used for raw material in a new electric furnace (p. 108) . . . Neutron bombardment (p. 113) detects the slightest flaws in metals . . . One method (p. 122) makes it possible to create plant layouts without drawing a line.

Metalworking Outlook—p. 57 Market Outlook—p. 153

Production of stainless tubing in sizes from 0.010 to 0.625-inch OD calls for close control of all operations — cold drawing, derodding and annealing

By PAUL V. FLY
Executive Vice President
Tube Methods Inc.
Bridgeport, Pa.

Charging end of Drever controlled-atmosphere annealing furnace. Note control board at left

Controls Ease Precision Tube Problems

INCREASED aircraft production and intensified activities in the nuclear field and expansion of modern industry and science have heightened the complexities of production at specialty tube shops.

At Tube Methods, operations center around production of small-diameter stainless steel tubing, made to rigid specifications and close tolerances. Operations are geared to meet the requirements of many applications, ranging from instrument control air lines, heat exchangers and pressure vessels for the chemical industry and minute surgical tubes such as bronchoscopes, to rugged aircraft deicing, fuel and hydraulic lines. Tubing sizes range from 0.010 to 0.625-inch OD.

Production begins with the purchase of standard size stock of stainless steel and other alloy materials. From that point production becomes a series of repeated operations—cold drawing, derodding and annealing. Specifications may be as low as 0.0005-inch tolerance on diameters, wall thicknesses 0.005 to 0.281-inch and overall diameters 0.050 to 0.625-inch.

Special Lubricant Used — In drawing operations, standard tubing is pulled through tungsten carbide dies at predetermined constant speeds. The extreme heat generated, plus the necessity of avoiding scratching or tearing the tubing, necessitated the development of a special lubricant for use in these operations. Inside measurement of the tubing during drawing operations is governed by a male die or mandrel inserted in the tubing.

In the first drawing step, the mandrel becomes mechanically bonded to the stainless steel tubing and must be released by an expanding operation. Rolls of various shapes, set at opposing angles toward the center of the axis, roll the tubes clockwise, simultaneously moving them forward. The amount of pressure exerted on the rolls determines the microexpansion of the tubing from the mandrel to permit its removal.

As a result of the drawing operations and the consequent stresses and pressures, there is a tendency to disturb the molecular structure of the stainless steel or other basic tube material. Stress relieving operations must be performed to re-align or restore the original molecular structure. Proper heating and cooling condition during stress relief improve th original strength and the corrosio properties of the tubing.

Controlled - Atmosphere Annea ing — Specially designed Drev controlled - atmosphere annealin furnaces are employed in the a nealing department. In addition stress relief, tube treatment these furnaces imparts a scal free, bright finish to inside a outside tubing surfaces. A gro of tubes is fed into the gas cha ber or muffle. Furnace temper ture is approximately 2000°F. the entire annealing operation t tubes are at no time exposed combustion gases. Atmosphe within the muffle is pressuriz with hydrogen, and all oxygen eliminated.

Design of the annealing fu naces is such that the heating a cooling operations are complet in one cycle. As a result of t absence of scaling in the hydrog atmosphere of the furnace, he treated tubing must be immedia ly quenched under atmosph upon removal from the heati chamber. This is effected by water-jacketed muffle welded the end of the heating muff

Discharge end of furnace showing sand seal. Tubes are at room temperature at this point

Ammonia dissociator with (right background) anhydrous ammonia cylinders. In center, an ammonia dissociator; at left foreground, control panel

A closeup showing the expanding operation for derodding drawn tubing

Treated tubes are ejected from the furnace through a sand seal which excludes air from the cooling chamber. At this point, ejected tubes are at approximate room temperature and are ready for final finishing operations and inspection.

Ammonia Dissociation — Ammonia dissociation equipment, supplied by Drever, was selected as the most economical means of furnishing hydrogen for the furnace atmosphere. Use of this method of hydrogen atmosphere production reduces the number of gas cylinders to be handled by a factor of 23 and results in an average cost reduction of approximately 60 per cent over the cost of an equivalent quantity of hydrogen gas if supplied directly from cylinders.

Ammonia dissociation equipment comprises cylinders of anhydrous ammonia, dissociator, heat exchanger and control panel. In operation, anhydrous ammonia from the cylinders is catalytically cracked in the dissociator and piped to the annealing furnaces. Automatic temperature control of the dissociator is based on a temperature measurement made by means of a thermocouple and Brown millivoltmeter-type pyrometer. The millivoltmeter actuates a magnetically-operated contactor to maintain the dissociator furnace temperature at proper degree for efficient ammonia cracking.

At highest efficiency, each pound of liquid anhydrous ammonia yields 45 cu ft of dissociated gas. The approximate composition of this gas is 34 cu ft of hydrogen plus 11 cu ft of nitrogen. Because of its extreme dryness (dew point minus 55°C to minus 65°C), dehydration to prevent the harmful scale-producing effects of water vapor on the tubes during the annealing treatment is unnecessary.

Temperature Controlled — Tube annealing furnaces are gas-fired. Heating chamber temperatures are measured by means of thermocouples projecting into the chamber, and connected to individual Brown millivoltmeter-type pyrometers. Control of furnace temperature is effected by the thermocouple millivoltmeter-type instruments and motorized fuel valves. In operation, the millivoltmeter-type pyrometer controller responds to furnace temperature deviations from the pre-established set point by energizing the fuel valve to increase or decrease the furnace heat as necessary to restore furnace temperature to the set point.

Maintenance of the correct furnace temperature is important in all stress relieving operations. Furnace temperature must be maintained sufficiently high to reduce the possibility of residual stresses, yet be prevented from going too high and thereby changing the grain structure.

Silicon Carbide Study Reported

Information about thermodynamic properties of silicon carbide, gained in experiments conducted by the Bureau of Mines, is published in a report released by the U. S. Department of Interior.

Physical chemists at the bureau's mineral thermodynamics branch, Berkeley, Calif., detail experimental treatment of two silicon carbide varieties and tabulate heat and free energy values for its production.

The report contains tables of experimental data. It also describes reactions involving gaseous silicon monoxide and elemental silicon as possible intermediates in silicon carbide formation, showing them to be thermodynamically feasible under certain stated conditions.

On-the-spot record of accidents and unsafe practices proves more effective than discussion. This method plus modern equipment produces constant improvement in safety record

Photographs Sell Safety Program

Safety Director Hall's photographs are more than a hobby, they're a major tool in reducing accidents

SHOOTING his way to lower accident frequency and severity figures —with a camera—describes the performance of Warren W. Hall, supervisor of safety at Crucible Steel Co. of America's Midland, Pa., works. Recognition of the value of graphic illustration in explaining accident causes and safety hazards has long been recognized by the safety supervisor and his assistants.

"You can talk to men about what caused an accident, you can tell them of the need for good housekeeping, you can describe the dangers of misplaced tools and equipment and if you're lucky you'll get maybe 50 per cent of what you're saying across," Mr. Hall says. "But if you can show them pictures of these things you'll show employees how to halt accidents."

Figures Speak — How far this program has taken Crucible's Midland plant is shown in its constantly declining frequency and severity rates of the last five years. The 1951 figures show the plant below the overall industrial average, as well as the average for steel companies. Midland has a frequency of 2.12 and a severity rate of 0.74. So far in 1952 the accident picture promises to be still better.

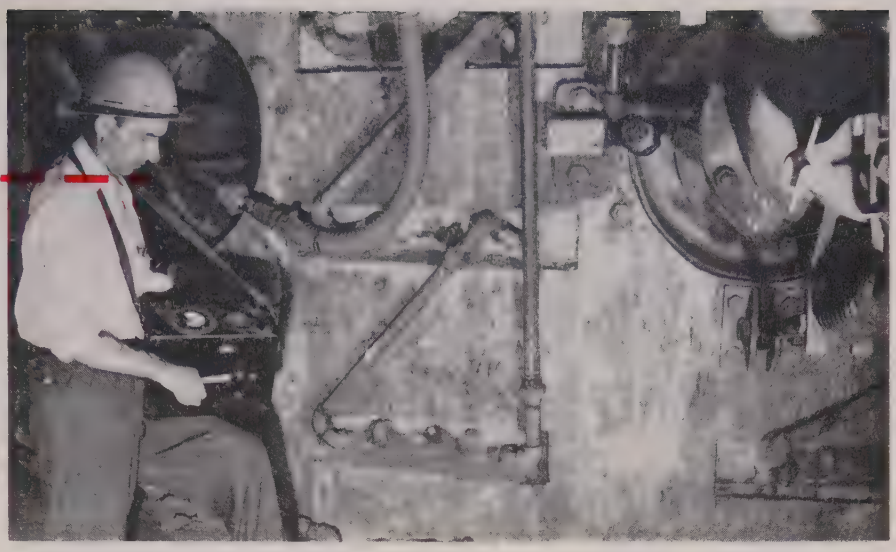
Mr. Hall, or a member of his staff, roams the length and breadth of the steel works taking pictures in all departments. Unsafe conditions and practices are recorded on the spot; extremely dangerous misdemeanors are remedied immediately. The safety staff, on 24-hour call for all accidents, takes pictures of every accident to show exactly how it happened. Then the pictures are put to work.

Complete Story—Each lost-time accident at all Crucible plants must be reported, in detail, to management in Pittsburgh. Mr. Hall's reports include a photograph of the accident in addition to a complete written description. If the accident's cause or causes can be traced to insufficient safety precautions—a fault which often can be remedied by the installation of safety equipment — management takes immediate steps to secure the needed protection. More often, however, accidents are caused by human failure. The pictures work to reduce these human failures.

Safety meetings are held on a regular schedule, and the pictures are the feature of every meeting. Meetings are held on three levels: General superintendent meets with department superintendents; department superintendents m e e with the foremen in their depar ments; and foremen meet with th men under their direct supervisio The safety department takes a active part in all meetings held.

Each meeting begins with a r port of progress made toward elim inating safety hazards discussed previous meetings. Reports careless and unsafe practices a made and suggestions are offere to combat them. At this point every meeting the pictures are i troduced. Since the safety depar ment is constantly at work wi the camera, few hazards escape d tection and consequent discussi at one or all of these meetings Few hazards, once discussed, r main hazards.

New Workers Identified—Reali ing the extra hazards confronti new employees, the safety depar ment takes extra precautions. Ea new employee must wear a whi arm band for a period of 30 da This arm band identifies him i mediately, to all personnel, as



Blast furnace areas are checked regularly for deadly carbon monoxide gas. Should a dangerous concentration of CO be found, warning bell clears area

ew employee, one who might overook hazards well-known to old ands. This regulation applies to ll new employees, regardless of heir steel mill experience White rm bands grew, naturally, from he number of accidents involving ew workers.

Crucible's entire safety program as been shaped in this way. Comlete records, by department and y job, are kept of all accidents. rom these records, safety measres are initiated.

First, a daily record of all accients in each department is made. very day each department head eceives the record of accidents in is department during the precedng day. Then, a monthly compilaion is made which shows accients by causes and the departents in which the accidents occurred. Another form lists number of employees in each department, number of disabling and lost time accidents, and frequency and severity rates for the current month, the year to date, and the average for the last five years, all by departments. The latter is sent to department heads and to headquarters in Pittsburgh.

Trouble Spots Controlled—These records help the safety department and department supervisors maintain control over the more common causes of accidents at the Midland works. It was largely through such records that the safety equipment used at Midland was first installed.

As an example of the equipment, the Dustfoe dust respirator, developed by Mine Safety Appliances Co., is widely used there. It offers protection for workers who are tearing down furnaces, repairing or replacing flues, blowing out motors, unloading lime and silicons, and in many other cleaning jobs in the plant where workers are exposed to nuisance, fibrosis-producing or toxic dusts.

Records helped point out the need for this protection on these jobs, and with a Midget Impinger, the safety department made the rounds of the plant to find these dust hazards. The Impinger, a portable instrument, samples air at the rate of 0.1 cfm.

Sampler is operated by a hand-cranked pump which, in conjunction with a vacuum regulator, maintains an unfluctuating suction of air through the instrument.

Eye and head protection are generally accepted throughout the plant. A complete range of styles of safety goggles is stocked by the safety department. The company can furnish a style of goggle answering the particular job requirement of any worker, and still be suitable for that worker's facial characteristics.

Modern Devices—Personal pro-

(*Please Turn to Page* 107)

Pneolator for administering artificial respiration is demonstrated to employee as part of plant's training program in safety

Machinability

Theory Pays Off

Basic principles and underlying laws governing the cutting and machining of metals are gradually being put to work to solve tough machining problems

By R. K. GOULD
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CUTTING and machining of metals is, at best, a complex operation. The problems induced by increased production, coupled with those arising from the introduction of new metals and alloys which have not heretofore been machined, present the metalworking industry with the greatest challenge in its history.

From the practical angle of economics and efficiency, increased production means higher cutting speeds and longer cutting tool life. In addition, the new nonferrous alloys of improved physical properties and resistance to corrosion and high temperatures are much more difficult to machine than the conventional alloys and require entirely different machining techniques.

Machinability Defined—The word machinability itself, although one of the most widely used words throughout the metal cutting industry, defies strict definition, as it has different meanings to different people at different times. To most tool engineers, machinability connotes a combination of characteristics of a cutting operation, including (1) life of the cuttting tool, (2) surface quality of the finished work, and (3) power consumed in machining a metal. The relative importance of these three factors depends on the nature of the operation, the equipment being used, and the ultimate use of the finished product.

Two fundamental physical processes are involved in all metal cutting operations: (1) A shearing process whereby the chip is formed, (2) movement of the chip up the face of the tool.

As the cutting tool advances through the workpiece, the metal, instead of being fractured on a line parallel to its surface, is actually sheared in a narrow zone starting at the cutting edge of the tool and proceeding at an oblique angle to the surface of the workpiece. This zone wherein the metal is sheared is known as the shear plane.

Once the chip is formed it slide over the face of the tool where encounters frictional resistanc In this region friction, wear an lubrication are of major interes

In the region of the finished su face, the surface and subsurfac characteristics of the machine metals are of particular concern.

Three Types of Chips—The sam two physical processes—shearin the metal to form the chip an movement of the chip up the fa of the tool—occur in all types operations, whether they be tur ing, milling, broaching, drillin planing, etc. The chip formed m be one of three distinct types, d pending upon the material bei machined and the conditions und which it is formed.

When brittle materials are m chined, or when certain ductile m terials are cut at low speeds, t metal cannot undergo the requir amount of shear without rupt ing, resulting in the formation type 1, a discontinuous chip. T chip may consist of individual se

TABLE I

Type of Chip	Description of Chip	Surface Finish
1	Discontinuous—formed by machining of brittle materials	Good
1	Discontinuous—formed by machining of ductile materials at low speeds	Poor
2	Continuous — low friction between chip and tool face	Best
3	Continuous — high friction between chip and tool face	Worst

TABLE II

Effect of Basic Mechanical Quantities on Forces, Surface Finish, and Tool Life

Property of metal being cut	A decrease in the given property has the following effect: Known effect on forces and power consumption	Usual effect on surface finish	Probable effect on tool life
Machining constant, C	Bad	?	Bad
Shear strength S_s	Good	None	Good
Coefficient of friction μ	Good	Good	Good
Hardness, H	*	None	Good
Strain hardenability, n	*	Good	Good
Amount of hard, abrasive inclusions in microstructures	*	None	Good

*Forces and efficiency are determined almost completely by values C, S_s, and μ.

TABLE III

Tool Life Index Numbers for Typical Flake Graphite Cast Iron Microstructures

Structure	Brinnel Hardness	Index Number
Ferrite, graphite (Full anneal)	120	20
50% ferrite, 50% graphite (Partial anneal)	150	10
Coarse pearlite, graphite	195	2
Medium pearlite, graphite	215	1.5
Fine pearlite, graphite	218	1
Fine pearlite, 5% Steadite graphite	197	1
Fine pearlite, 5% free carbide, graphite	240	0.3
White iron	over 500	

TABLE IV

Relationship Between Microstructures of 8640 Steel and Machinability, Using a 78 B Carbide Tool

Structure	Hardness	Cutting Speed To Remove 100 Cu. In.	Cu. In. Removed at 300 FPM
Spheroidized	170	705	—
50% Pearlite — 50% ferrite	170	490	275
75% Pearlite — 25% ferrite	190	475	185
Tempered	300	290	93
Tempered	400	120	18

ients, loosely joined to each other. n other instances complete rupure may occur at the shear plane. n these cases a crack frequently s visible ahead of the tool along ne shear plane. If this type of hip is the result of machining a rittle metal, the power consumption will be low, tool life will be easonable and the finish of the nachined surface will be fair. When a type 1 chip is formed from nachining a ductile material, it is sually accompanied by poor surace finish as well as excessive tool ear.

No. 2 Chip—The type 2 chip occurs when the metal is continuously deformed without rupture and lows smoothly up the tool face. his chip is most desirable from he standpoint of surface finish, ool life and power consumption nd is associated with relatively ow friction between the chip and ne tool face. It is usually obtained hen ductile materials are machined at cutting speeds in excess f 200 fpm, or by the use of effective cutting fluids.

The third type of chip occurs hen a type 2 chip is formed under uch conditions that very high rictional resistance is encountered s the chip moves up the face of ne tool, causing some of the metal o shear away from the body of ne chip and remain on the tool ace, resulting in a "built-up edge."

Shear Angle—One of the most mportant factors in the cutting peration is the shear angle. This s the angle formed at the intersection of the shear plane and the irection of the cutting tool or the urface of the work material. The amount of metal deformed in the formation of the chip depends upon the size of this angle.

When the shear angle is small, path of shear is long, the amount of metal deformed is large, and the resulting chip is short and thick. Conversely, when the shear angle is large, the path of the shear is short, the amount of metal deformed is small, and the chip is long and thin. For optimum machinability a large shear angle is desirable.

Shear angle is not a constant quantity but varies over a wide range with the cutting conditions and the properties of the metal being machined. It is a measurable quantity for any given operation, but as yet cannot be predicted in advance since all of the factors involved have not been established.

Mechanical Variables — Through the use of suitable dynamometers, all the important forces and energy relationships for any given cutting operation can now be determined, making it possible to evaluate practical machining operations and machining characteristics of work materials in terms of basic physical quantities.

Fundamental work along these lines has led to the discovery and isolation of three basic mechanical variables, shear strength, coefficient of friction and machining constant, which are of prime importance relative to controlling the geometry and forces involved in forming the chip.

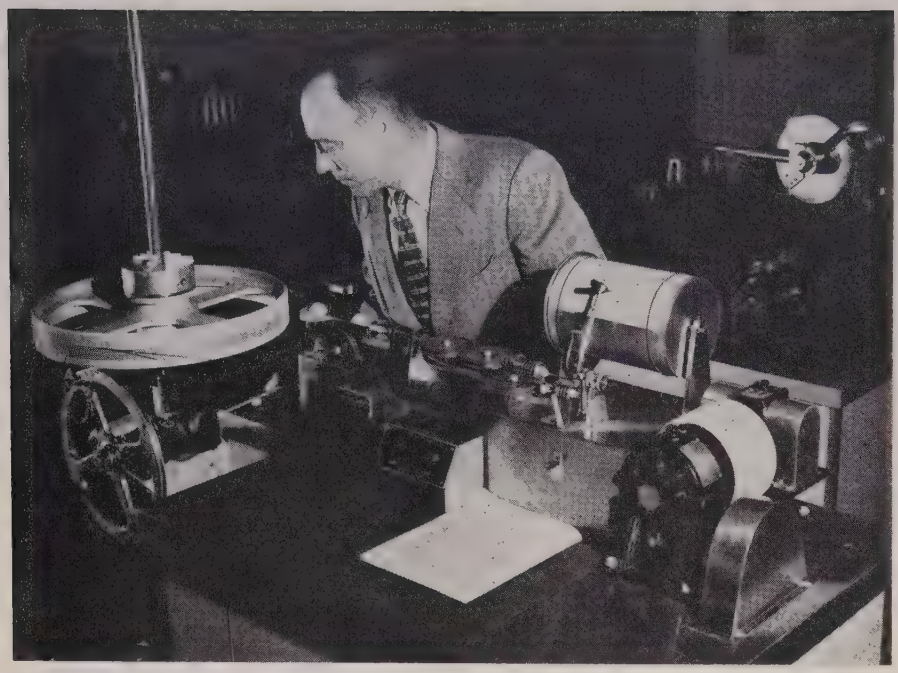
From the standpoint of efficient and economical machining operations, low values of shear strength and coefficient of friction, and high values of the machining constant are desirable.

Surface Finish—Formerly, quality of the finished surface was rated entirely by simple visual inspection. Now however, with the adoption of a measurable unit—the microinch—by the use of a profilometer which can record the peaks and valleys of the surface, and with the aid of transparent plastic films by means of which complete permanent visible records of all surface imperfections can be obtained, the nature of the surface can be defined and described much more accurately.

Table I summarizes the general relationship between the nature of the chip and the quality of the surface of the machined metal. The best finish is usually obtained with the continuous chip of low frictional resistance (type 2), and the worst finish generally results from the continuous chip of high frictional resistance (type 3).

Of the three basic mechanical variables, only the coefficient of friction is known to have an effect on the surface finish. A reduction in the value of this variable will be accompanied by an improvement in the surface.

Strain Hardenability — Another factor which has a great effect on the surface finish is the strain hardenability of the metal. A material which can undergo deformation and distortion without strain hardening is known as an ideal plastic. However, all engineering metals upon being internally sheared and deformed will strain harden, with the result that the chip and the region near the sur-



Lab Standards in Production Line Testing

Laboratory standards of precision in testing efficiency of automobile steering gears are brought to the production line by this new machine. Developed and built by Chrysler Corp.'s Engineering Division, the device provides ample capacity and ruggedness to make test runs at the factory practical. Machine is seen here in preliminary lab tests at the company's New Castle, Ind., plant

face of the machined metal will be harder than the original material.

Tendency for a metal to undergo strain hardening is sometimes expressed by a quantity known as the Meyer hardness exponent. Increasing values of this quantity indicate a greater tendency for the metal to strain harden. Quality of the finished surface varies inversely with the Meyer exponent, and thus strain hardenability might be considered as another basic mechanical variable having a direct influence on machinability.

Longer Tool Life — Increasing production and reducing costs are largely contingent upon the possibility of increasing tool life. From a practical standpoint this might be considered the most important of the factors which enter into machinability considerations. Life of a tool is usually measured in terms of the volume of metal removed before it must be reground, and it varies with cutting speeds and feeds, as well as with the nature of the metal being machined.

A cutting tool may fail (1) by breaking or chipping due to faulty design or application, (2) by wearing out or (3) by being overheated. The first of these is strictly mechanical in nature.

Tool Wear—Wear of a cutting tool occurs in two regions—on tool face or the area in contact with the chip and on the clearance side of the tool or the region where the tool is in contact with the finished surface. Wear at the tool face usually occurs some distance from the cutting edge and is known as "cratering." Wear on the clearance face begins at the cutting edge and is called a "wear land".

In general all tool wear may be attributed to two basic causes:

1. Wear due to the plowing or abrasive action of the carbides or other hard particles in the work piece.
2. Wear resulting from instantaneous welds that occur when the chip and finished surface slide over the tool faces.

Plowing or abrasive action may be regarded as a secondary cutting operation, and the rate of wear depends upon the size and number of hard particles in the metal and the relative hardness of the tool and the work piece.

Builtup Edge — Two types of welds may occur, namely, pressur welds and temperature welds. Th former occur at temperatures be low and the latter at temperature above the recrystallization tem perature of the metal. In the ma chining operation the chip forme is forced against the tool fac under extremely high pressures and if the cutting speeds and re sulting temperatures at the chip tool interface are low, pressur welds can be established. With weld of this type, the weld inter face is stronger than the two me als involved in its formation an when such welds are broken, th rupture occurs somewhere in th bulk of the chip, resulting in transfer of metal from the chip t the tool face.

This is the "built-up edge" whic forms and breaks down hundred of times per second and whic eventually becomes part of the fin ished surface. As a result of strai hardening the built-up edge much harder than the origina metal and this in turn will caus acceleration in the rate of wea due to abrasive action. Abrasio due to the hardening of the chi the built-up edge and the work su face depends upon the initial har ness of the metal, the strain har enability and the amount of shea ing strain involved in the form tion of the chip.

No Strain Hardening — Formo tion of temperature welds occu without strain hardening, an when the weld is broken, the su faces separate in the same pla in which they were formed. The is no tendency toward the form tion of a built-up edge, but wh the surfaces separate, small pa ticles of the tool matrix may transferred to the chip. The exte of this transfer-type of wear w depend upon the mean area ov which temperature welds occur a the relative strength of the to and work piece.

Thus, at very low cutting spee the temperatures will be low a the welds formed will all be of t pressure type. As the cutti speed is increased, temperatu will also increase and a point v be reached where temperatu welds will begin to form. As c ting speeds are further increas

l the welds formed will be tem-erature welds.

Thus, the basic mechanical vari-bles, whose effects on tool wear re known, are shear strength of ie metal, coefficient of friction, achining constant, strain hard-enability, initial hardness of the etal and microstructure of the etal. Effect of these basic me-anical quantities on forces, sur-ace finish and tool life is shown in able II.

Tool Life vs Temperature—Al-hough the exact relationship be-ween temperature, tool life and orces in metal cutting are far from eing completely established, there eems to be a direct relationship etween the temperature at the hip-tool interface and the tool life. s this temperature increases, abil-y of the tool to withstand the orces exerted upon it decreases apidly. Consequently, in the in-erest of long tool life, it is im-erative that temperature at the hip-tool interface be kept as low s possible.

Cutting Fluids — Most of the ork performed in a cutting oper-tion is translated into heat, which as just been indicated as being ost detrimental to the life of a utting tool. Thus, any practical eans of reducing the flow of heat ormed to the tool is, in most cases, ery desirable.

Any means of reducing the total mount of heat formed in the cut-ng process must also be looked pon with favor. Cutting fluids an be effective in both respects. n fact, a cutting fluid has two asic functions in the machining rocess.

1. To serve as a coolant and remove heat from the cutting tool, work piece and chips.
2. To serve as a medium for reducing the friction that occurs as the chip slides up the face of the tool.

A cutting fluid also has another unction which frequently is of ractical importance and that is to ush the chips away from the cut-ng zone.

Microstructure and Machinabil-y—Until recently little has been one to apply metallurgical knowl-dge to the improvement of ma-chining conditions. However, it is now recognized that tool life and surface finish are directly related to the microstructure of the metal being machined.

Materials having similar metallurgical structures will likewise have similar machining characteristics, regardless of their relative physical and chemical properties. On the other hand, it has been shown that slight variations in the microstructure within a single piece of stock can cause as much as a five-fold change in tool life.

Specific treatment and control of the work metal before machining has been seriously neglected. However, on the basis of current information it is now apparent that far closer scrutiny of the microstructure is needed, and more important, once the optimum microstructure is known, close control in the processing of the metal is required in order that the microstructure desired be produced.

Alloying Elements—Just as the presence of carbon complicates the picture of pure metals, the presence of alloying elements complicates the picture of plain carbon steel. All the alloying elements that are found in steel are generally undesirable from the standpoint of tool wear.

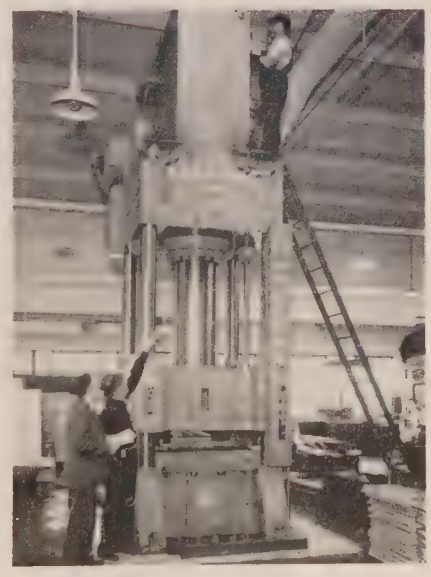
Those elements which form additional hard carbides, such as vanadium, tungsten, chromium and molybdenum, cause a significant increase in the hard particle plowing wear. Those elements which go into solid solution generally cause an increase in the hardness of the matrix and also increase the tendency of the matrix to strain-harden. Nickel is particularly troublesome in this respect. The built-up edge that is formed will be harder. This, in turn, will cause greater plowing wear.

Increased hardness of the matrix will also cause an increase in transfer wear since the hardness of the tool and the work piece will be more nearly equal, and consequently there will be a greater tendency for particles to be plucked from the surface of the tool as the temperature welds come apart. While fewer pressure welds might be expected in the alloy steels as a result of the harder matrixes, the welds which are formed give rise to larger built-up appendages as a result of the increased strength of the more highly strain-hardened material in the built-up edege.

High Temperature Alloys—Sudden demand for jet engines and turbines in large quantities and at reasonable prices presents the metal cutting industry with one of its greatest challenges. To withstand the high forces and chemical attacks at the high temperatures to which they are subjected, these turbines and engines must be fabricated from highly alloyed metals which are extremely difficult to machine.

Three major reasons for the difficulties encountered in the machining of these materials are: (1) They exhibit extremely high shear strength during cutting; (2) they have a high capacity for strain hardening; and (3) their microstructures due to strain hardening and the presence of precipitated carbides are highly abrasive.

Plan Operations — Most of the variables in the machining process have been found to be especially critical in the case of these jet engine alloys. Acceptable tool life and production rates can be ob-



Working off the Backlog

This 42,000-pound hydraulic Clearing press is the largest of many tools installed by American Machine & Foundry Co. at its Buffalo Division for work on a $23 million defense order backlog. The 500-ton capacity unit is 24 feet high and is used for drawing, blanking and stamping sheet and strip

tained only if the microstructures, feeds and speeds, and tool materials are carefully selected.

In machining these jet engine alloys, particularly the bucket materials, the first step should be to plan the sequence of manufacturing operations, if possible, so that all of the major rough machining operations may be performed with the solution treated form, leaving only a minimum of stock for finish grinding. The second step is to use the best carbide available pending the development of better tool materials. Finally, tool life will be satisfactory only by using best feeds and speeds.

FRAME ASSEMBLY PASSES THROUGH THE STITCHER
. . . secures one per minute with 30 stitches of 20-gage round wire

Metal Stitching Reduces Sieve Assembly Time

METAL STITCHING machines installed by Allis-Chalmers Mfg. Co.'s West Allis works reduce manufacturing time on gyratory sifter sieve frames about 75 per cent.

The firm reports its previous hand method required 44 minutes to attach metal guard strips to the boards on each frame. By machine, the same operation takes 11 minutes.

A sieve frame consists of 14 boards, 11 of which require a metal lining. Application of 28-gage galvanized sheet steel permits a longer life for wooden boards because it cuts down wear that results from abrasive action of material being sifted.

Board a Minute—Under the new procedure, the sheet metal pieces are punched on each end and nailed to the board with two nails. The subassembled board is then run through the metal stitcher, where the sheet is secured to the wooden frame boards with 30 stitches of 20-gage round wire.

The new operation is completed at the rate of about one board per minute—or 11 minutes for each complete frame. Among advantages reported by A-C in addition to time saving are the consequent increase in production capacity and greater advantage that can be taken of less skilled feminine employees.

Magnetized Hammer—Before installing the Acme-Morrison stitcher, A-C used a center punch and hammer to punch 40 holes in each wooden sieve frame so ½-inch flat head nails could be driven by hand with a magnetized hammer. This forced an average time allowance of 4 minutes per board for securing metal strips and boosted the total to 44 minutes for each frame.

Two-Story Hole Spotter

Lockheed's 30,000-pound dri saves manhours, frees spac taken by floor-model jigs

TWO-STORY-TALL drilling to for precision hole spotting is in creasing production rate on mag nesium floor sections in Lockhee Super Constellation transports.

Engineers at Lockheed Aircra Corp., Burbank, Calif., where th tool was designed and built, sa their jig is the only one of its kin in the aircraft industry. It mea ures 35 feet, 5 inches long and feet, 9 inches high. Total weigh is about 30,000 pounds.

The company reports thousan of production manhours are save by the setup. In addition, the say, it frees floor space that othe wise would be needed for eigh standard floor jigs.

Two-Sided Tool—The multi-uni two-sided drill is big enough to u a 15-man crew on each side f drilling the large number of hol required to bolt the floor togeth and attach tie-down fittings. Plan are destined for Navy cargo-pa senger-ambulance service.

Holes are drilled in exact loc tion through 10 movable dr plates, five on each side of t structure. These steel plat weighing 1000 pounds each, a lowered into position or raised v tically to their storage rack electric motors.

Sloped-Angle Surfaces—Anoth production aid is the sloped-an construction of the tool's work surfaces. The slope, slightly vertical, keeps unsecured plan from falling to the floor.

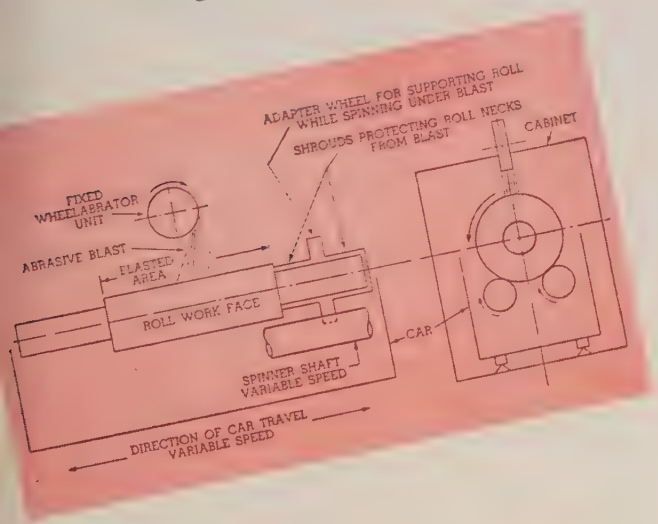
Width of the Navy's mo 1049B Super Constellation ca floor is comprised of 22 T-sha extruded magnesium planks, e 5 inches wide. These planks, cal hat sections, interlock to form self-strengthened bed.

Proper Alignment—Divided i four right-hand and four left-h units of different lengths, the fl is joined at a longitudinal cen section. One edge of the cen joining planks is drilled on e side of the jig to assure pro alignment with its mating pla and to compensate for expansio the metal in varying temperatu

NEW SAVINGS for the steel industry

Etching mill rolls with the Airless WHEELABRATOR®

The Wheelabrator opens new horizons in cost-savings possibilities for steel mills in the etching of mill rolls used in temper mills. In a typical installation at the Weirton Steel Company, 8 to 9 inch diameter rolls are etched in just 54 seconds blasting time. Large 26 and 27 inch diameter rolls used in the cold mill, are etched in 3 minutes blasting time.



The diagram shows the airless Wheelabrator method of roll etching. This exclusive development conveys and rotates the work under a fixed and constant rectangular blast from the wheel.

PAYS FOR ITSELF THROUGH SAVINGS

Weirton previously roughened its temper mill rolls by passing emery paper between the rolls after installation in the mill. By eliminating use of emery paper for the initial etching of ground rolls, the Wheelabrator will more than pay for itself through savings in the cost of paper alone. Another big advantage is that it provides a better shape to the roll which means better gripping in the mill. Wheelabrating also provides an etch of a more uniform depth and texture which insures an improved surface on the steel sheet.

AN IMPROVEMENT OVER AIRBLASTING

The Wheelabrator roughens mill rolls in 1 to 3 minutes that commonly takes from 10 to 30 minutes in conventional airblast machines. It produces a uniform etch automatically at a greatly reduced cost per roll. It is a proved fact that rolls so etched have a materially increased life in the mill with a resulting increase in tons rolled per set of rolls.

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AIRLESS BLAST CLEANING

WORLD'S LARGEST BUILDERS OF AIRLESS BLAST EQUIPMENT

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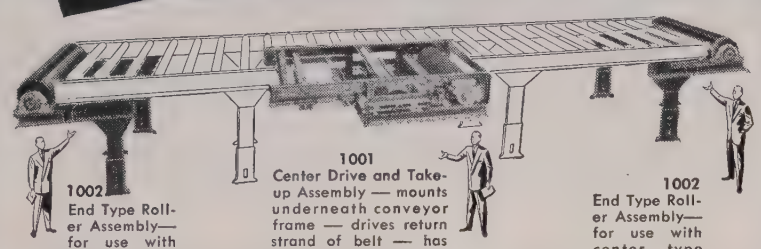
Standard HANDIDRIVE 1000 SERIES PRE-BUILT POWER CONVEYOR UNITS



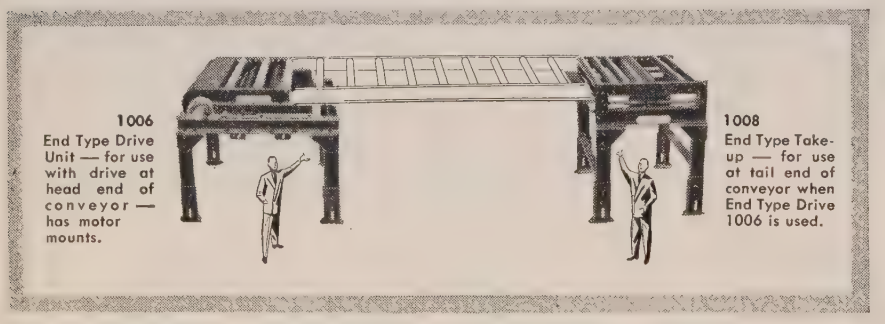
1002 End Type Roller Assembly—for use with center type drive 1001.

1001 Center Drive and Take-up Assembly — mounts underneath conveyor frame — drives return strand of belt — has motor mounts.

1002 End Type Roller Assembly—for use with center type drive 1001.

HANDIDRIVE 1001-1002 PRE-BUILT CONVEYOR UNITS

This Center Drive and Takeup Assembly drives return strand of belt—mounts underneath conveyor frame — can be used to convert present gravity conveyors to live, or powered, belt or roller conveyor or to make additions or changes to existing power conveyors. Unit 1002 is End Type Roller Assembly for use with 1001 Center Drive Assembly.

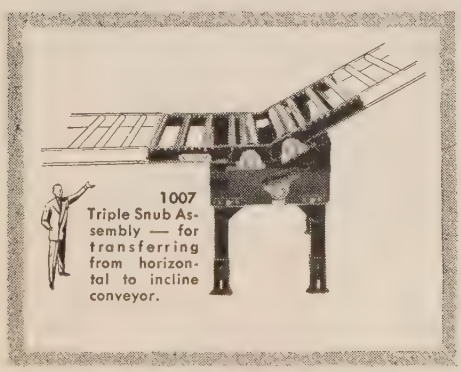


1006 End Type Drive Unit — for use with drive at head end of conveyor — has motor mounts.

1008 End Type Take-up — for use at tail end of conveyor when End Type Drive 1006 is used.

HANDIDRIVE 1006-1008 PRE-BUILT CONVEYOR UNITS

1006 is an End Type Drive Unit for use with drive at head end of conveyor. 1008 is an End Type Take-up for use at tail end of conveyor when End Type Drive 1006 is used. These two stock units make it an easy and simple matter to put together a complete power conveyor line.



1007 Triple Snub Assembly — for transferring from horizontal to incline conveyor.

HANDIDRIVE 1007 PRE-BUILT CONVEYOR UNIT

This is a Triple Snub Assembly Unit for placing in a conveyor line for transferring flow of commodities from horizontal to incline. Another of Standard's stock units that provide flexibility of planning and arrangement in making your own custom-built conveyors.

Send today for HANDIDRIVE 1000 Series and complete information. Conveyor-engineering service is offered without obligation. Series "400" and "700" units also available for lighter load applications. Write Dept. ST-82.

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Send for special bulletin HANDIDRIVE 1000 Series and Bulletin 63B describing Standard Gravity and Power Conveyor Units.

Photographs Sell Safety

(Continued from Page 97)

tective clothing and equipme form only part of the precautio taken to keep accidents from ha pening. A constant check for ca bon monoxide is made in the bla furnace area. One workman, e pecially chosen for the job, equipped with an MSA carbo monoxide indicator. He takes a samplings with the portable ind cator, and sounds a warning be to clear the area if he finds dangerous concentration of C Although ventilation in the area usually adequate, the safety d partment has found that the wi can change so suddenly that liv may be jeopardized. Safety re ords indicated that protection wa necessary, and the carbon mono ide indicator was brought into us The indicator is hand-operated a can be used safely even whe flammable gases may be presen It shows the presence of carb monoxide in any atmosphere, i dicating the percentage on a direc reading calibrated meter which h a scale range from 0 to 0.15 p cent CO.

Certain protective devices a needed at the coke plant. The n ture of operations demands th adequate protection against e plosions be afforded. This probl is solved with the use of Explo meters, flammable gas indicat designed at Mine Safety labo tories for users who make perio tests of gas or vapor in air m tures. Combining the use of t portable meters with an alarm a a gas-purging system, the pos bility of explosions at the cok plant is greatly reduced.

Periodic cleaning of coking pl tanks is carried on at Crucible a cleaners are equipped with fr air hose masks. Workmen w must enter the tanks wear a g tight mask assembly fitted wit hose which runs from the mask a pump. Fresh, clean air is s back through the hose to the ma With this form of respiratory p tection, a man can work for tended periods in confined ar where high concentrations of g exist.

Long Life OBA — Wherever

b must be done in an area which s been checked and found lack- g in oxygen, workers are uipped with the MSA Chemox ygen breathing apparatus. The it generates its own supply of ygen for the wearer, providing mplete respiratory protection for minimum of 45 minutes in high- toxic gaseous areas or in any ea where oxygen deficiencies ist. Greatest application is on id around the blast furnaces here the dangers of carbon mon- ide or oxygen deficiencies are ost prevalent.

In addition to the equipment ept in the blast furnace area, four its are in readiness at safety de- artment headquarters for rescue ork in gaseous areas. The com- aratively long life of the ap- aratus makes it ideal for pro- nged stays in places which ordi- arily would be uninhabitable.

Just in Case—Despite all precau- ons against carbon monoxide and her toxic gases, equipment em- odying the latest advances in au- matic artificial respiration tech- que is kept available. MSA neolators are kept ready, one at ch blast furnace, so that rapid eatment is possible. Another neolator is kept at the coke plant, ill another will soon be installed the plant hospital and a unit for e plant ambulance is planned.

The unit administers artificial spiration by intermittent positive essure, without negative pres- re during exhalation, which ight be harmful to lung tissue, pecially where irritant gases are haled. Oxygen is administered tomatically in precisely the right nount, to victims whose breath- g has ceased and the instrument tomatically switches over to an halator phase, feeding oxygen on mand, when the patent's breath- g is restored.

lm Shows Diesel Repair

Inspection, repair and testing are ustrated in a 10-minute sound ovie titled, "Make Your Diesel action Repairs Stay Repaired," oduced by Westinghouse Electric rp., Pittsburgh. The film follows diesel-electric traction motor rough one of the firm's shops demonstrate proper procedure.

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Engineered for Your Application

Johnson Bronze engineering is far more than designing bearing types and shapes. It is based on thorough studies of your product, its service requirements and your methods of assembly. Johnson engineers start with complete information—load, speed, shock, operating temperatures, lubrication, corrosive conditions and other data. Design is often affected by installation and mounting methods. After this study they may recommend one of several types of sleeve bearings and the correct bearing alloy for your use. And they will design the bearing to your requirements, working closely with your engineers. If this kind of service will be valuable to you, write, wire or call for an appointment.

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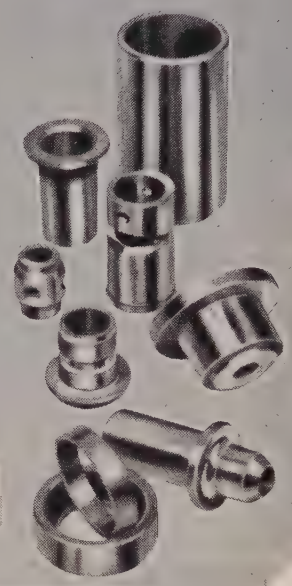
550 South Mill St., New Castle, Pa.



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JOHNSON B BEARINGS
Sleeve-Type

Philippine Plant Makes First Steel

War surplus scrap serves as raw material for electric furnace shop. Merchant mill specializes on reinforcing bars. Plant operates under government protection

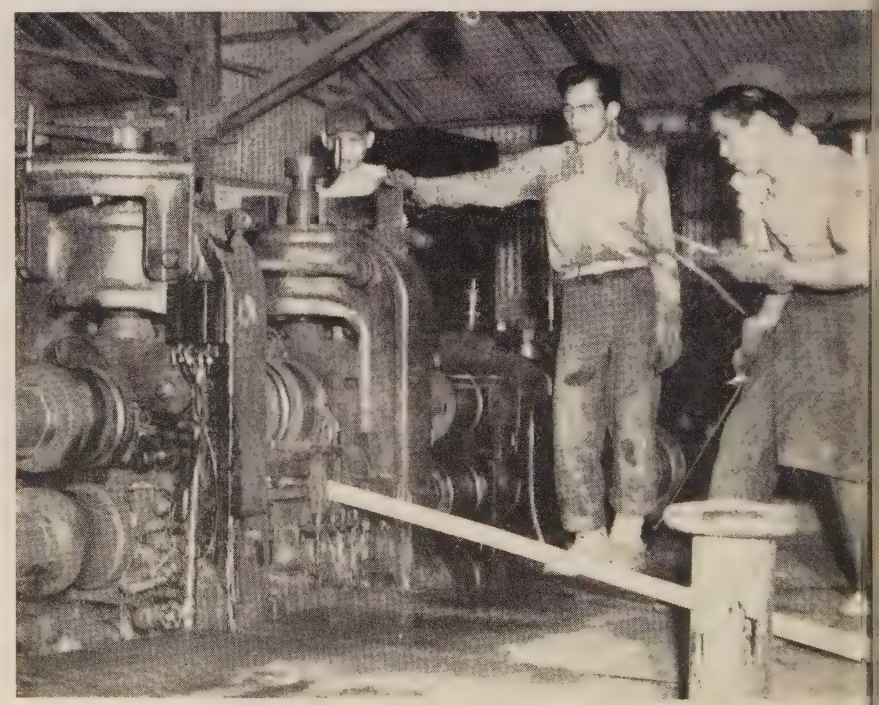
Tapping a heat from one of three electrics in new Philippine Island plant

ONE of the drives of any new nation is economic nationalism with self-sufficiency as its goal. The Philippine Republic is no different than any other country in this respect. For the new electric steel melt shop and rolling plant operated by the Marcelo Steel Corp. in Manila is a typical example of a local industry that may succeed because of government protection.

The first rod mill started production early this year on steel reinforcing bars ranging from $\frac{3}{8}$ to 1-inch diameter. The plant, which represents an investment of more than $3 million, consists of three electric arc furnaces, an ingot breakdown mill and a rerolling train. The entire plant was bought in Japan. Currently, just the rerolling mill is in operation—depending on the supply of war surplus scrap.

Meets Requirements—Mill output has met the AASHO specifications for high-grade steel bars and the cold bend test for structural billet steel bars for concrete reinforcement. Prices of these bars in the local Manila market is about 400 pesos ($200) a metric ton. Imported bars are about 500 pesos ($250) a metric ton. With the three electric arc furnaces and the ingot breakdown mill scheduled for commercial production in August, the price will be lowered to 300 pesos ($150) a metric ton. Total production is expected to be 40,000 metric tons annually upon completion of the plant.

Most of the construction trade in Manila (many of whom are importer-wholesalers) claim that the bars may be all right for construction purposes but that they are not too close to the quality of those



Billet entering first pass of bar mill train

NEW B&W CONCRETE SOAKING PIT COVER

This B&W Refractory concrete soaking pit cover construction is making news in the steel industry. Reason? It results in substantial two-way savings:

COSTS LESS TO INSTALL

As a rule, refractory castable soaking pit covers of B&W Kaocast need only 1/10 to ¼ man-hours per square foot. In one plant a crew installed a Kaocast cover in one-sixth the time . . . a *half day* as compared to the three days required for a plastic cover.

LASTS LONGER

B&W Kaocast, the 3000 degree refractory castable, has high resistance to spalling and slag attack, thus gives longer service. A B&W soaking pit cover, for example, was still in excellent condition after being in service twice as long as plastic covers previously used on the same pits.

Kaocast also offers other important advantages. Extra covers can be cast as a spare time job, then stored indefinitely without an initial firing-in. Kaocast is easy to work . . . makes possible faster repairs to damaged sections.

Ask your B&W Refractories representative for all the facts.

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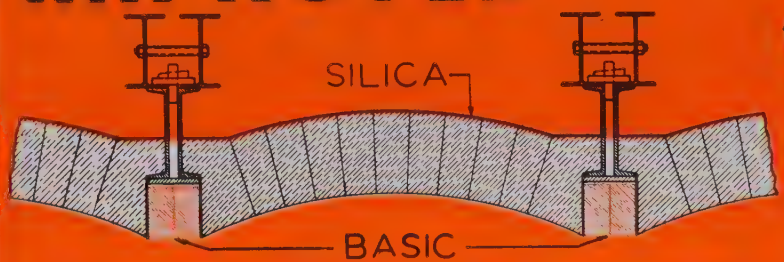
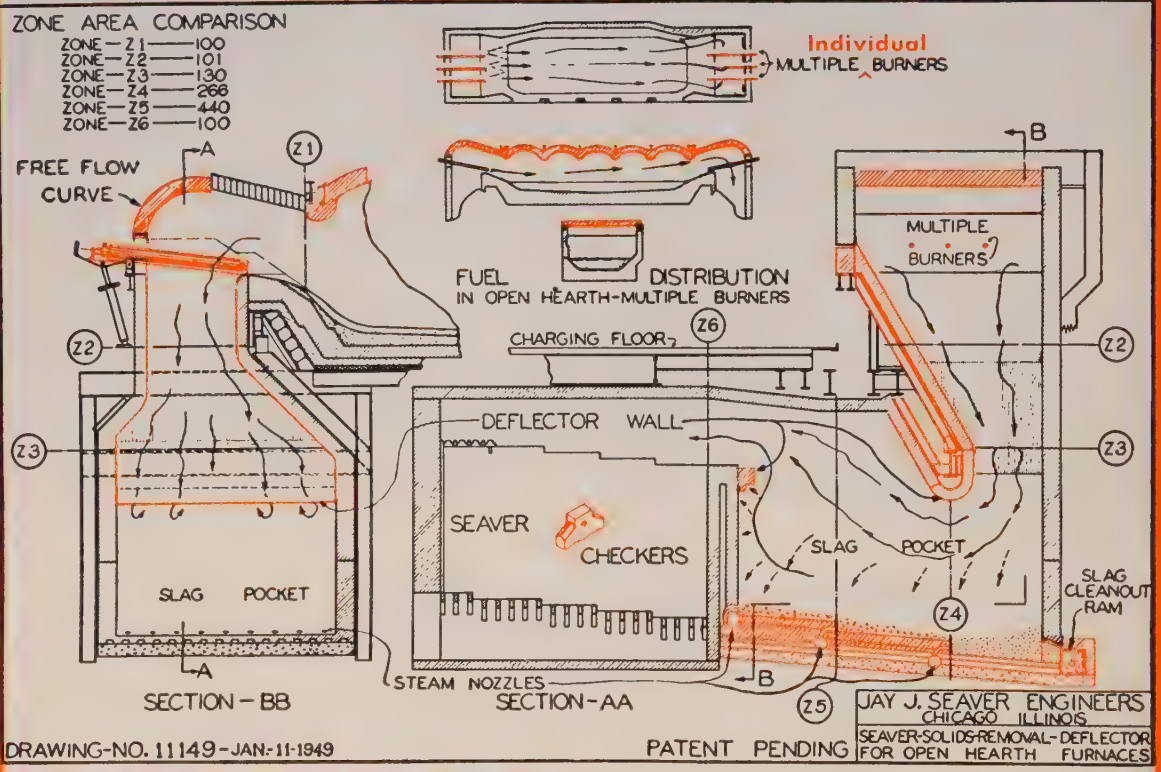


with CAMEL BACK ROOF

Advantages of Basic Roof at Price of Silica



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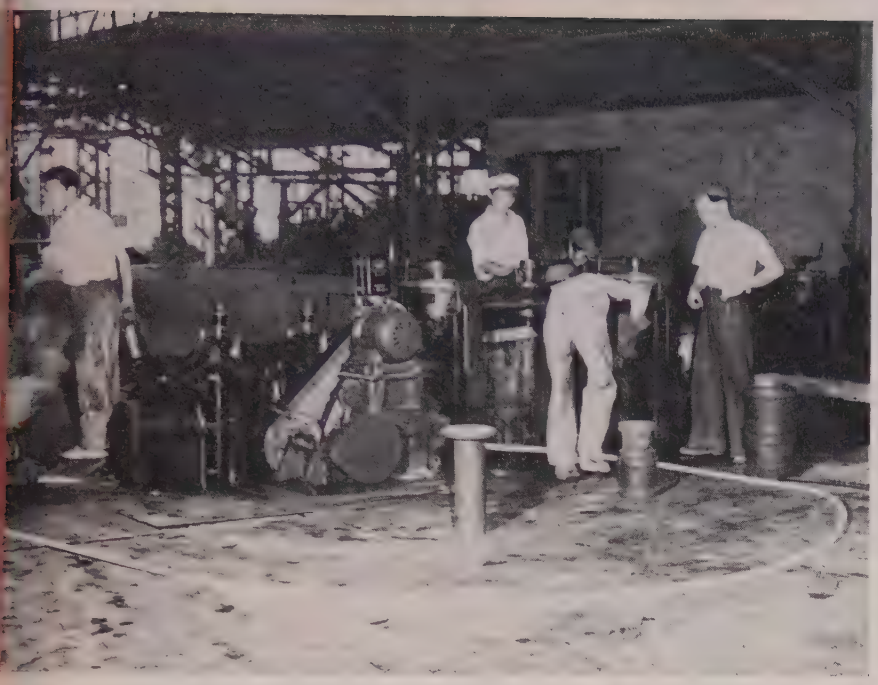

tod being looped from one stand of rolls to another for further reduction

roduced by United States mills. The trade traditionally prefers U.S. structural steel because of its stablished reputation. Marcelo tates that there is enough steel crap in Manila harbor to last for he next ten years, but the ques-ion is how to get it out. Marcelo lso wants to bar imports claiming hat total production from its mill s more than enough to meet local equirements.

But with the Philippine govern-ient protecting local industry, the egular trade realizes that Marcelo ay succeed in having the present uty-free imports banned from the Jnited States. The government ill help Marcelo to protect its own nvestment. The firm already re-eives a five-year income tax ex-mption as a "new and necessary ndustry."

Initial Plant—In any event the lant is operating and will continue o do so in the future. The Filipino ends to look at the operation from n emotional rather than an eco-omical point of view. There is a ood deal of national pride in the ct that this is the first plant of s kind in the Islands. It was put p by Filipino capital and employs ilipino labor.

The government also is planning step into the steel manufactur-g picture. It has made plans for uilding a $3.5 million plant at Ili-an, Lanao, near the iron ore de-osits in Mindanao. It will be for the production of ingots and bar mill products. Its power will come from the Maria Cristina hydro-electric power project in Mindanao, which is currently being built. It was financed with the aid of MSA funds.

Tube Stored Systematically

Quick location and easy removal are two virtues of twin-rack system. Here's how it's done

EASY-ACCESS short-term storage for wide range of lengths, diameters and alloys of special tubing is provided by Superior Tube Co., Norristown, Pa. Secret is an unusual twin rack system with a mobile platform lift to move between the racks.

Each rack is built of 3-inch channel (vertical members) and 1½-inch (horizontal members) forming a lattice measuring about 25 feet wide by 12 feet high by 21 feet deep.

Openings in the latticebox are 12 inches square. Each rack has 300 such openings. Intermediate members along the long dimension of the lattice provide support for tubing of varying lengths up to the full 21 foot depth of the rack.

One-Man Job—Racks face each other across an open area 20 feet wide. In this area a Lewis-Shepard Spacemaster operates. Bundled and tagged material is then pushed to a position in vertical line with a desired opening. Tubes to be stored, together with one or two operators, are then lifted to the desired height directly in front of the opening in which tubing is to be stored. One man can do the whole job, if necessary, since lift can be controlled easily from the platform.

Each opening is stenciled with two numbers, designating horizontal and vertical location. This entry is placed on the stock card and material is ready for easy identification and removal when needed.

Works to Save — Important virtue of this system is that it allows holding a variety of sizes and alloys against a future requirement. Most of the alloys handled contain critical or scarce elements and it is advantageous to conserve even the smallest quantities.

Also much of the mill run at Superior is in special alloys drawn and reduced to close tolerances. This means occasional small quantities of oversize, undersize, scratched or otherwise rejected tubing, in addition to normal mill overruns.

These small lots, when saved, make it possible to fill pilot or experimental orders for certain alloys more rapidly and efficiently. Tubing thus held can be returned to the reducing mill and brought to the required condition without the initial breakdown steps necessary if new redraw material were taken from stock.

SAE Evaluates Power Plants

Review of truck maintenance practices and evaluation of new-type power plants are top features discussed by Society of Automotive Engineers at its National West Coast meeting in session Aug. 11 through 13. Specific topics include consideration of the new Humphreys controlled-compression engine, the gas turbine and supercharged diesels.

The session was sponsored by SAE's Diesel Engine, Fuels & Lubricants, Transportation & Maintenance, and Truck & Bus Sections at the Fairmont Hotel, San Francisco.

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THERE'S hardly a structure or piece of equipment in your plant that won't serve you *better* and *longer* if it's protected with Pitt Chem Tar Base Coatings. No other material does such a complete job of protection at so little cost.

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eactor Points up Flaws

Working as a partner in inspection, neutron bombardment makes impurities stand out

ONSTRUCTIVE USE of atomic ıergy to detect and measure im-ırities in metals and other ma-rials has been developed by nion Carbide scientists at Oak idge National Laboratory.

Analysis technique, which should elp manufacturers improve the urity of the final product, is now eing offered as a service to indus-ial, scientific and medical organ-zations by arrangement of the tomic Energy Commission.

Under Bombardment—C. E. Lar-on, director of the laboratory, ex-lained that analysis technique in-olves placing test sample in a raphite reactor. Sample is ex-osed to neutron bombardment and races of impurities in the mate-ial are made artificially radioac-ive. Then, using highly sensitive nstruments and detectors, the cientists can measure with great ccuracy the exact quantities of mpurities that may be present.

According to experience thus far, eutron-activation analysis can be f much practical value in deter-nining minute quantities of ele-nents in biological substances, fine hemicals, fuels, lubricants, metals nd alloys, minerals and ores, plas-ics, dusts and toxicants.

Strong Points — Dr. Larson oints out that in working with the ew method, research personnel ave noted it has several outstand-ng advantages not common to ther methods of analysis. Proper-ies indicate that it is extremely ensitive for detecting and measur-ng many chemical elements that ccur in only slight traces—so light that they cannot be deter-nined by other chemical and phys-cal testing processes.

Method can be more specific than thers since elements to be tested, vhen irradiated, produce artificial-y radioactive isotopes that have heir own characteristics as to nodes of decay and types of radia-ion. The characteristics are never xactly duplicated in any other ra-ioisotopes produced.

Possibility of contamination that

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keeps you on the safe side

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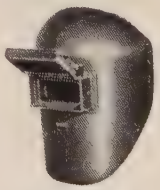
CHIP-WELD GOGGLE No. DC53

Weld lens lifts up to leave clear Super-Tough® lens in place for chipping and inspection.



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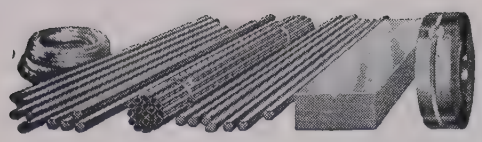
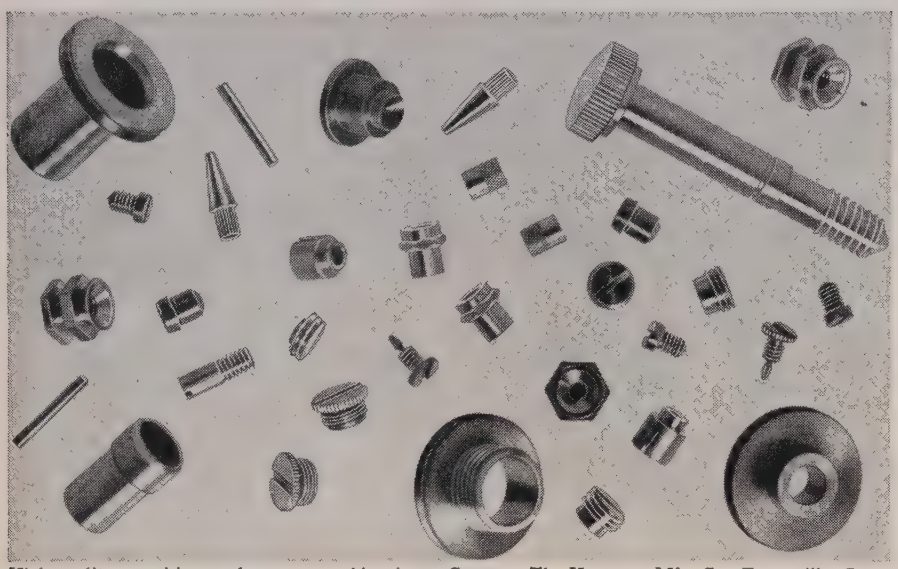
WILLSON PRODUCTS, Inc., 233 Washington St., Reading, Pennsylvania



BRIDGEPORT BRASS COMPANY

COPPER ALLOY BULLETIN

"Bridgeport" BRASS CO. MILLS IN BRIDGEPORT, CONN. AND INDIANAPOLIS, IND.—IN CANADA: NORANDA COPPER AND BRASS LIMITED, MONTREAL



High-quality, precision-made screw machine items. Courtesy The Humason Mfg. Co., Forestville, Conn.

Building up a Reputation for Quality Screw Machine Items

Why are some screw machine shops consistently busy at all times while others depend upon peak periods of industrial activity for their very existence? The answer as to what makes a successful shop tick may well be strict quality control backed up by dependable service.

How can a screw machine shop obtain the needed quality-plus service for successful operation?

Most screw machine items are made on a contract basis to customers' specifications. Since they are intended to go into some special assemblies, they must be uniformly accurate and close in tolerances otherwise they can easily give endless trouble. The smaller the item, the more need for exactness.

Every screw machine operator knows that consistent quality demands good equipment and tools. Machines must be put into tiptop condition and maintained that way. He is aware that tools must be given careful attention for proper grinding and sharpness. For long runs, and heavy removal of stock, he must go to carbide tools for highest efficiency.

Good Labor Relations Essential

Management can achieve the objective of quality and service so necessary for the business success of a screw machine shop whose operation calls for skilled workers that are dependable and self-sufficient. A good operator uses his own judgment as to the state of his tools and accuracy of his production. Close watch and frequent periodic gauging of his production are absolutely essential.

The development of a high-type operator takes long, patient years as well as a considerable investment in money. Good management, therefore, makes every effort to establish good labor relations which will result in the minimum of labor turnover. To achieve this, the management gives the worker pleasant surroundings and considerate treatment. Naturally, he must receive steady employment and suitable compensation for his efforts. High quality and good service are premiums which are in great demand by users of metal products, and repeat orders as well as new business results.

Alloy Selection Important

The choice of metal or alloy rod is important especially for the manufacture of difficult items or those that must stand severe usage. Management must have an open mind and be willi to look into and try out different a loys and tempers.

Copper-base alloys for screw m chine operation are numerous an varied. For most jobs Ledrite 6 Stan ard, free cutting brass rod (approx mately 61% copper, 3.4% lead, r mainder zinc) is highly satisfactory. is exceptionally free machining an gives off fine chips. Its composition uniform and dimensions are accurat Tool wear is minimized. Yet, und certain conditions where deep knurli or cold-working is necessary, Ledrite made with a softer temper may more suitable. Or an alloy with le lead such as Ledrite 2 Medium Lead (approximately 63% copper, 1.8 lead, remainder zinc) should be use

An inquiry as to the customer's a plication of the screw machine pa may lead to the recommendation of superior metal. For example, if go corrosion resistance is called f Leaded Commercial Bronze 89 (a proximately 89% copper, 1.75% lea remainder zinc) should be considere It resists dezincification from corrosi well waters. It has a rich bronze col and a machinability rating of 80% compared to Ledrite 6 which has 100% rating.

Naval brass 24 (approximately 60 copper, 0.65% tin, remainder zin is specified by the Navy for maki marine hardware, screws, bolts a nuts. It has a machinability of 30 Naval brass can also be supplied wi 1.75% lead (Alloy No. 29) and as l as 0.6% lead (Alloy No. 28). The a dition of lead does not affect its cor sion resistance but improves its m chinability.

Where great strength, hardness a excellent corrosion resistance a needed, Duronze III Alloy 707 (a proximately 91% copper, 7% alum num, 2% silicon) should be consi ered. It has a machinability rating 60% as compared to Ledrite 6. D ronze III can also be used for pum parts for corrosive waters and for t manufacture of valve stems.

Bridgeport metallurgical laborato will be glad to assist manufacturers helping them to select the alloys be suited for specific applications. (87

STEE

CAUSES OF CORROSION

This article is one of a series of discussions by . L. Bulow, corrosion metallurgist of the ridgeport Brass Company.

DEZINCIFICATION CORROSION (Cont'd)

Dezincification Accelerated By Galvanic Coupling

In the previous issue of this column, e discussed the prevention of dezinci- cation of high zinc brasses (cathodic) rough galvanic coupling with more ctive metals such as magnesium, alu- inum, iron, etc. (anodic).

We shall now consider what hap- ens when a high zinc brass (anodic) coupled to a less active metal such s graphite, platinum, gold, silver, etc. cathodic).

Colgate[1] states that, "Contact of rass with graphite may give rise to erious dezincification," and that he as seen "dezincification caused in this ay in various pieces of apparatus in hich compressed graphite compo- ents have been in contact with brass. n another instance, through a misun- erstanding, a graphite paint was ap- lied to a Muntz metal casting exposed o sea water, and most serious dezinci- cation took place very rapidly at amaged parts of the coating."

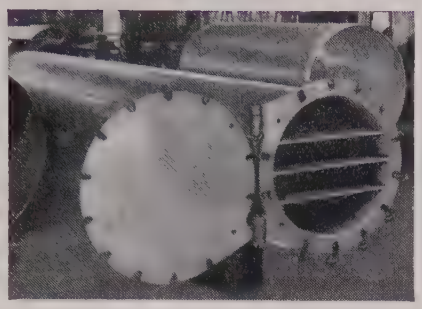
Occasionally, localized dezincifica- on may occur alongside of soldered, razed, or welded joints where these aterials are cathodic to the yellow rass (anodic). It should not be over- ooked that incomplete removal of oldering flux residues such as zinc hloride are a powerful cause of de- ncification, which we discussed pre- iously. In addition, high zinc brazing aterials in certain environments may e subject to accelerated dezincifica- on where they are used to join cop- er, bronzes, and other high copper al- oys when the latter materials are ca- odic to the brazing alloy.

Bialosky[2] has shown, through lab- ratory experiments, that dezincifica- on of Muntz metal and naval brass an be considerably accelerated by ap- plying an anodic current to these metals in tap water and certain chlo- ride and sulfate solutions. An increase in the anodic current density accele- rated dezincification. Under the same test conditions, inhibited brasses such as arsenical Muntz metal and arsenical naval brass did not suffer from dezinci- fication. In sodium bicarbonate and so- dium carbonate, a dense black film of corrosion formed on the anodic surface of the brass and oxygen evolved, but no dezincification occurred.

In actual service conditions, the stimulation of dezincification by an ex- ternally-supplied current is uncom- mon. However, the generation of a cur- rent produced by a galvanic cell is more likely to stimulate dezincifica- tion.

[1] G. T. Colgate, METAL INDUSTRY, 73,26,-507-509 (December 24, 1948)

[2] J. M. Bialosky, CORROSION and MATERIAL PROTECTION, 4,15 (1947)



Waste water heat reclaimer for bleachery. Courtesy The Patterson-Kelley Co., Inc., East Stroudsburg, Penna.

Salvaging Waste Heat

Every cloud of steam escaping into the atmosphere; every discharge of a warm waste liquid into sewers; the cooling off of hot materials; the hot exhaust gases from combustion of fuels, all represent losses of valuable heat. The potential savings through recovering waste heat are surprisingly high.

A waste water heat reclaimer for a bleachery uses Duplex tubes—steel inside to the waste water, and copper outside to the incoming fresh water. Heat exchangers for extracting heat from waste laundry water and exhaust steam use copper tubes.

NEW DEVELOPMENTS

This column lists items manufactured or developed by many different sources. None of these items has been tested or is endorsed by the Bridgeport Brass Company. We will gladly refer readers to the manufacturer or other sources for further information.

Steam-jet Cleaner, heavy duty, portable type, said to make available under finger-tip control hot dry steam and solvents as needed at pressures up to 200 psi, as well as scouring jets of hot or cold water at pressures up to 400 psi. No elements or coils to burn out and no tubes to replace. Boiler water itself is the resistance heating element and if there is no water, no current will flow. **No. 1246**

Power Torque Tool, air powered, is said to give close control in the 0-25 inch-pound range. Desired torque is set on built-in torque wrench and operator uses tool as he would any nut runner. Weight of hand tool is around 6 pounds, which can be offset by overhead tool balancer. Quick-change type of wrench adaptors are available. **No. 1247**

Adjustable Angle Thermometer, movable through 180 degrees, is said to save time in selection of angles for thermometers being installed on new equipment. Installation is said to be simplified by this thermometer which can be positioned to any 180-degree arc, front or back, left or right. Said to be visible at wide angles and resistant to shock and vibration. **No. 1248**

Stamping and Parts Conveyor, wheel-mounted for portability, is said to maintain continuous flow of parts from production machines to tote boxes or to next operation. Available in 4, 6 and 8-ft. lengths and with 4, 8 and 12-in. belt widths, head end of conveyor can be raised or lowered. Wide choice of belts includes woven cotton, Neoprene and waterproofed cotton with cleats on 24-in. centers. Standard speed is 55 fpm. but others can be supplied. **No. 1249**

Running Time Meter is hermetically sealed and tamper-proof. Power is furnished by a self-starting synchronous motor available for 110-125, 220-250 v, 50 or 60 cycles ac. It registers in 1/10 hour steps to 9999.9 or hour steps to 99999. Steel case provides magnetic shielding. **No. 1250**

BRASS, BRONZE, COPPER, DURONZE, NICKEL SILVER, CUPRO NICKEL
BRIDGEPORT BRASS
BRIDGEPORT BRASS COMPANY, BRIDGEPORT 2, CONN. • ESTABLISHED 1865
Mills at Bridgeport, Connecticut, and Indianapolis, Indiana • In Canada: Noranda Copper and Brass Limited, Montreal
Warehouse Service with Slitting Facilities in Principal Cities
Advertisement

might interfere with testing, a matter that is often encountered in conventional analyses, is negligible in neutron-activation analysis. It exists only when the material irradiated contains large amounts of elements that strongly absorb neutrons.

New method permits examination of larger samples than the amounts usually used in conventional analyses, and it has an accuracy of 10 per cent or better.

Insulating Shells from Nylon

Special drawing grade of nylon strip is being used to draw and form insulating shells for small-type servo-motors. Atco Electronics Corp., Brooklyn, N. Y., reports it has perfected a special method of drawing the shells on a production basis using strip supplied by Polymer Corp. of Pennsylvania, Reading, Pa.

The manufacturer says the standard FM10001 nylon, 0.015 inch thick by 2 inches wide, is sufficiently tough to permit forming without fracturing. This quality also prevents damage and causes fewer rejects in assembly. In addition, says the company, the material will not support fungus growth.

Other characteristics cited by Atco include form stability under high temperatures, such as those met in temporary overloads or with hot impregnating compounds.

When it comes to production—come to Hartford Special

NEW Larger Size—Greater Capacity

AUTOMATIC THREAD ROLLER

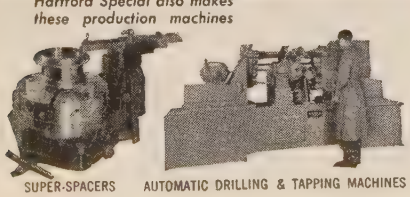
MODEL A-312-H

The Hartford Special Model A-190 Automatic Thread Roller has now been on the market for more than three years. During this time it has met with universal satisfaction from its many users, and this favorable reception and experience by the trade has naturally influenced us to design and develop a larger capacity machine.

NOW HARTFORD SPECIAL ANNOUNCES the new Model A-312 Thread Roller which takes machine screws up to 5/16" diameter by 2½" long at a production rate up to 140 pieces per minute dependent upon screw size.

If you roll threads, write for Bulletin TR-312-100.

Hartford Special also makes these production machines



SUPER-SPACERS AUTOMATIC DRILLING & TAPPING MACHINES

HARTFORD Special ...the best buy in the long run

THE HARTFORD SPECIAL MACHINERY CO.
HARTFORD 12, CONNECTICUT

Carbon Absorption Cut

NBS lab tests show ability of ceramics to prevent precipitation of carbides

CERTAIN ceramic coatings succeed in preventing carbon absorption by stainless steels used in aircraft exhaust systems. Success of the coatings was demonstrated in recent laboratory tests conducted by National Bureau of Standards.

Unchecked, absorption causes precipitation of carbides at or near grain boundaries, resulting often in failure of exhaust parts under severe operating conditions. The NBS study, one of a series sponsored by National Advisory Committee for Aeronautics, sought evidence on the results achieved by several ceramic coatings, including types A-417 and A-19H. These were applied to three 18-8 stainless steels, AISI 304, 321 and 347.

Selected Heats — To make the tests, the bureau packed small sheets of the various coated and uncoated alloys in an alloy box with a commercial carburizing compound. The box was then placed in a furnace and heated slowly to 1350, 1500 or 1650°F. After 4 hours at one of these temperatures, the box was removed and allowed to cool.

After examination for significant surface changes, NBS says specimens were sectioned, etched and examined further metallographically. Although some coated specimens showed blistering, spalling or wrinkling, the bureau reports that metal became exposed in none.

Absorption Evidenced—Most of the uncoated specimens evidenced carbon absorption to depths

. . for clean performance

The motor carrying a Fairbanks-Morse seal is your assurance of long, dependable service . . . the *best* in motor performance.

Why? In totally enclosed, fan-cooled motors, for example, Fairbanks-Morse brings you symmetrical dual-end ventilation, an exclusive feature that speeds cooling, eliminates "hot-spot" dangers . . . complete protection of vital parts from dust, chips and corrosive gases . . . for clean performance in the dirtiest locations.

Whatever the drive problem on your equipment, you'll find the one motor best suited to that application in the complete Fairbanks-Morse line.

When you look for electric motors . . . look for the Fairbanks-Morse seal. For over 120 years it has stood for the finest in manufacturing integrity—to *all* industry. Fairbanks, Morse & Co., Chicago 5, Ill.

FAIRBANKS-MORSE

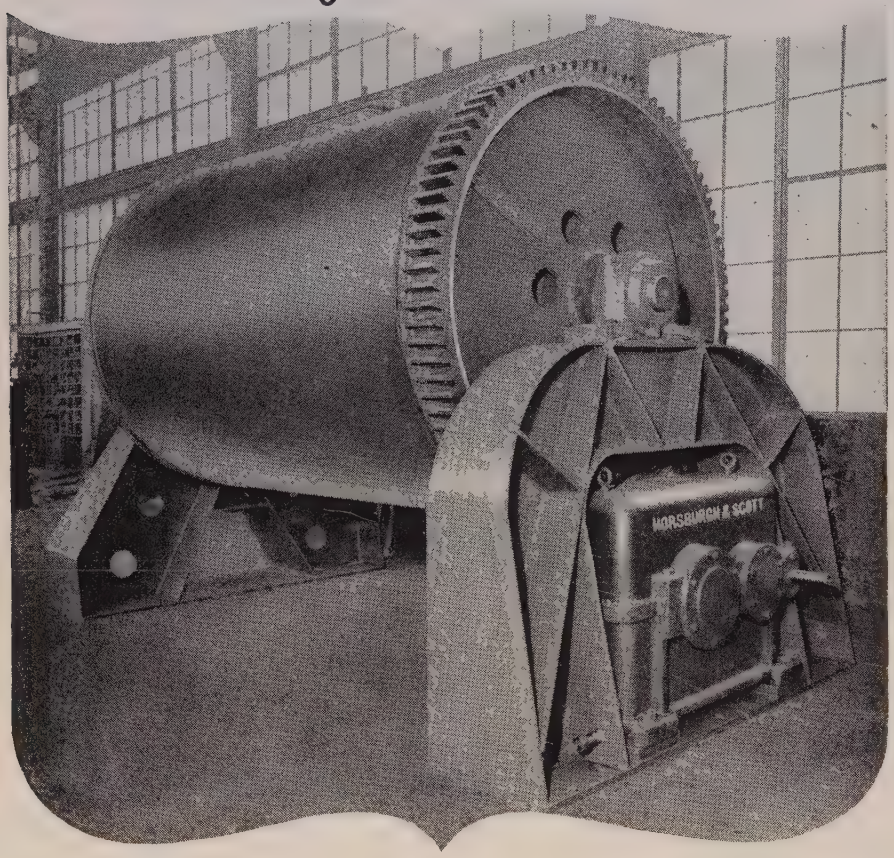
a name worth remembering when you want the best

ELECTRIC MOTORS AND GENERATORS • MAGNETOS • DIESEL LOCOMOTIVES AND ENGINES
PUMPS • SCALES • HOME WATER SERVICE EQUIPMENT • RAIL CARS • FARM MACHINERY

H & S SPEED REDUCERS

save maintenance and space with

Greater safety



• Since 1940 the Horsburgh & Scott Herringbone Speed Reducer illustrated above...driving an Epworth Manufacturing Company Ball Mill in a large paint manufacturing plant... has been in operation with *no* repairs necessary. The service is severe with heavy starting load and the machine operates continuously for periods of 24 to 72 hours. As compared with the old drives the results are: greatly reduced maintenance and space... greater safety is also an important feature. H & S Speed Reducers offer many savings and advantages throughout the range of industry...it will pay you to investigate.

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 HAMILTON AVE. • CLEVELAND 14, OHIO, U. S. A.

Send note on Company Letterhead for Speed Reducer Catalog 46

Flexible Protection

Flower pot-shaped flexible valve shields made of neoprene synthetic rubber are introduced by Industrial Products Co., Philadelphia, for use on valves handling acids and other hazardous chemicals. Shields cup the stem and packing gland, preventing acid from spraying on the operator

great as 0.007-inch below the surface.

Among coatings studied, the A 19H proved most effective under all test conditions. However, NB says the extreme severity of these conditions would probably never be met in practical operation of aircraft exhaust systems. This leads to the conclusion that any of several slightly-less-effective coatings should prove completely satisfactory in service.

Timken Makes New Product

Steel and Tube Division, Timken Roller Bearing Co., is making a graphitic steel product — a turned and bored bar section—that includes all advantages of graphitic type tool steel plus the convenience of the hollow bar section in manufacturing ring gages, dies and other annular tool steel parts.

The company says the product will be known as Graph-Mo Hollow Bar. Its basic material is Graph-Mo tool steel which Timken has been marketing for more than 15 years.

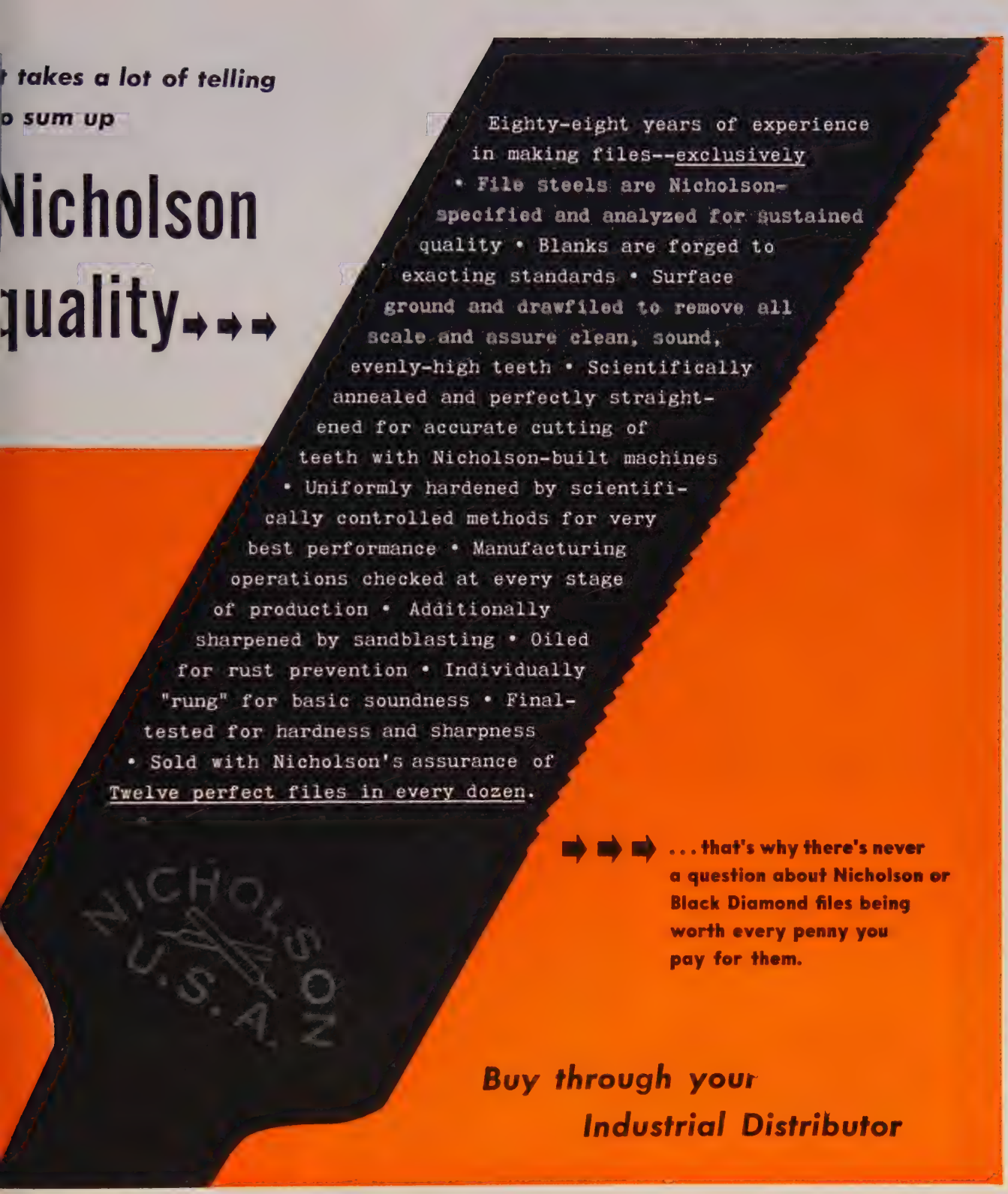
Timken expects to have the new material stocked in 15 cities throughout the United States. Initial stocks are expected to be ready for distribution this September.

Stock sizes will range from

t takes a lot of telling
o sum up

Nicholson quality→→→

Eighty-eight years of experience in making files--exclusively • File steels are Nicholson-specified and analyzed for sustained quality • Blanks are forged to exacting standards • Surface ground and drawfiled to remove all scale and assure clean, sound, evenly-high teeth • Scientifically annealed and perfectly straightened for accurate cutting of teeth with Nicholson-built machines • Uniformly hardened by scientifically controlled methods for very best performance • Manufacturing operations checked at every stage of production • Additionally sharpened by sandblasting • Oiled for rust prevention • Individually "rung" for basic soundness • Final-tested for hardness and sharpness • Sold with Nicholson's assurance of Twelve perfect files in every dozen.



→→→ **. . . that's why there's never a question about Nicholson or Black Diamond files being worth every penny you pay for them.**

Buy through your Industrial Distributor

The high and wide reputation of these outstanding files is in itself good evidence of their quality. But there are plenty of technical facts in support of it (as exemplified above).

FREE 48-PAGE BOOK, "FILE FILOSOPHY," to aid your production and purchasing personnel toward a full understanding of the kinds, use and care of files. How many copies, please?

NICHOLSON FILES

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A FILE FOR EVERY PURPOSE

about 3 inches to 16 inches outside diameter with a variety of wall thicknesses.

Safe Multiple Coal Blasting

Multiple blasting of coal can be done as safely as single hole blasting if charges are loaded properly, stemmed and fired in an approved manner. This is the conclusion reached in a report released by Bureau of Mines, U. S. Department of the Interior, after a study conducted at the bureau's experimental mine at Bruceton, Pa.

In single, simultaneous and short-delay multiple blasting, the report states, no gas or coal dust ignitions occurred when permissible explosives were fired in stemmed holes. Gas was ignited in many tests with unstemmed holes.

The bureau describes various factors that cause ignition of gas during blasting. It also lists several recommended methods to reduce the number of misfires. They add that multiple short-delay blasting, when properly handled, should produce no more misfires than single-shot blasting.

Work also was done to determine effects of blasting on the mine roof, quantity and breakage of coal produced by multiple blasting and amount of dust formed during shooting. The study includes relative time requirements for different blasting procedures.

Fly Ash Studies Correlated

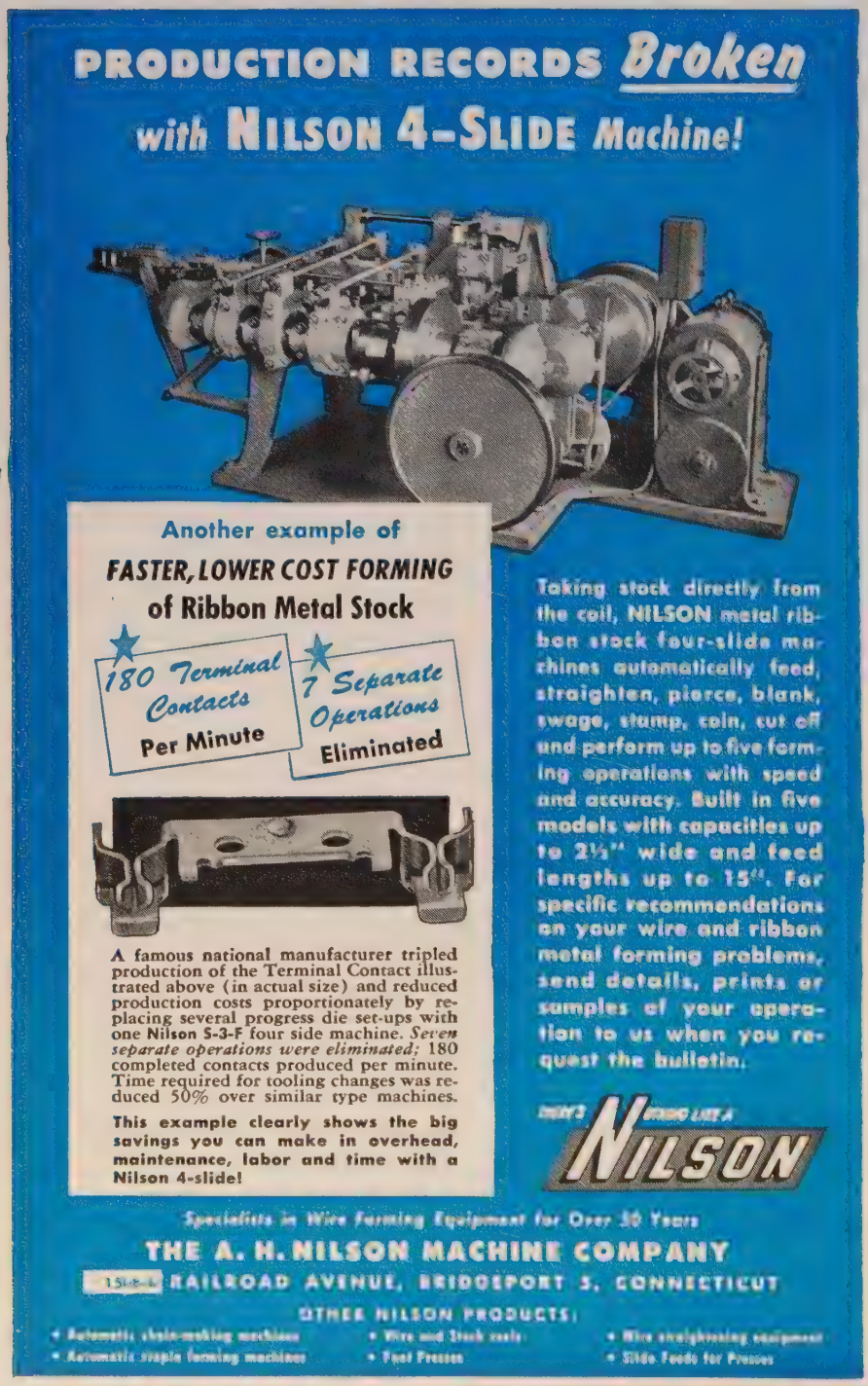
Increased use of forced draft coal burning equipment in boiler furnaces and recent municipal air pollution laws create a flyash disposal problem in many U. S. cities. Studies by scientists in industry and government aimed at attempting to solve the problem by finding new uses for the collected material are described in an information circular released by U. S. Bureau of Mines.

The bureau's report summarizes 37 articles on the subject previously printed in technical and trade journals. It includes charts and tables showing the results of tests made to determine what physical and chemical properties the ash should have to make it applicable for specific markets.

At present, some ash is used in making brick, tile and building block, as a binder for building materials, a filler for asphalt products and an abrasive for cleaning metal surfaces. Most promising outlets, concludes the bureau's report, are the concrete industry, where ash is substituted for portland cement and the bituminous road industry where it is used as a mineral filler.

SDPA Reports Inspection Tips

Assistance on a common problem among small firms in defense production—how to turn out products that meet rigid production requirements—is offered by Small Defense Plants Administration titled, "Precision Measuring of Workpieces." The leaflet is one of a series of dual management-technical aids issued by SDPA's management service division. The companion management release covers "Reducing Accident Costs through Safe Working Conditions."


PRODUCTION RECORDS Broken
with NILSON 4-SLIDE Machine!
Another example of
FASTER, LOWER COST FORMING
of Ribbon Metal Stock
180 Terminal Contacts Per Minute
7 Separate Operations Eliminated
A famous national manufacturer tripled production of the Terminal Contact illustrated above (in actual size) and reduced production costs proportionately by replacing several progress die set-ups with one Nilson S-3-F four side machine. Seven separate operations were eliminated; 180 completed contacts produced per minute. Time required for tooling changes was reduced 50% over similar type machines.
This example clearly shows the big savings you can make in overhead, maintenance, labor and time with a Nilson 4-slide!
Taking stock directly from the coil, NILSON metal ribbon stock four-slide machines automatically feed, straighten, pierce, blank, swage, stamp, coin, cut off and perform up to five forming operations with speed and accuracy. Built in five models with capacities up to 2½" wide and feed lengths up to 15". For specific recommendations on your wire and ribbon metal forming problems, send details, prints or samples of your operation to us when you request the bulletin.
NILSON
Specialists in Wire Forming Equipment for Over 50 Years
THE A. H. NILSON MACHINE COMPANY
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OTHER NILSON PRODUCTS:
• Automatic chain-making machines • Wire and Stock reels • Wire straightening equipment
• Automatic staple forming machines • Foot Presses • Slide Feeds for Presses

QUARTER-MILE ROADBED...sun-baked, ice-swept...YET STILL ON THE MOVE AFTER 14 YEARS OF COAL HAULING SERVICE!!!

Photographs may not lie; but, ere's one that falls far short of elling the whole truth about the emarkable performance records nalked up by this Republic Rub-er's Coal Handling Conveyor Belt.

But, then it's quite a story! You an see for yourself there's lots of ky overhead and that means sun . . constant, unrelenting sun beat-ng down on the conveyor belt urfaces, until seasonal changes ring about onslaughts of rain, now and sleet.

The load, of course, is coal . . . n abrasive, mine run coal that's ropped through chutes and car-ed by the belt to stockpiles cated throughout the dock area.

With these facts in mind and nowing that when the ship moves out, there's nothing to protect the belt against spraying lake water, consider this:

The belt is now fourteen years old and still going strong!!!

Purposefully, we've left the photo unretouched to show you just what a 14-year old Republic Rubber Conveyor Belt really looks like . . . to show you just how well a Republic Conveyor Belt stands against the ravages of time, hard labor and all the elements can throw at it. Incidentally, the dark spots you see on the belt's surface aren't worn places at all. That's water . . . water that makes ordinary conveyor belts mildew and prematurely fail, but holds few terrors for Republic Conveyor Belting because they're "mildew-proofed"!

It's to your advantage to learn why Republic Conveyor Belts like this can year in, year out, many times outperform and outlast other brands of belting.

Despite abrasion, impact, flexing, weathering or contact with heat, oil and chemicals, Republic Conveyor Belts continue to be your best insurance against breakdowns, short life and high handling costs.

Write us today for the name of your local Republic Rubber Distributor who can offer expert advice and fast service on all industrial Rubber Products.

Remember, whether it's hose, belting, packing or any one of hundreds of different molded and extruded specialties . . . **if it's built of rubber, Republic builds it better!**

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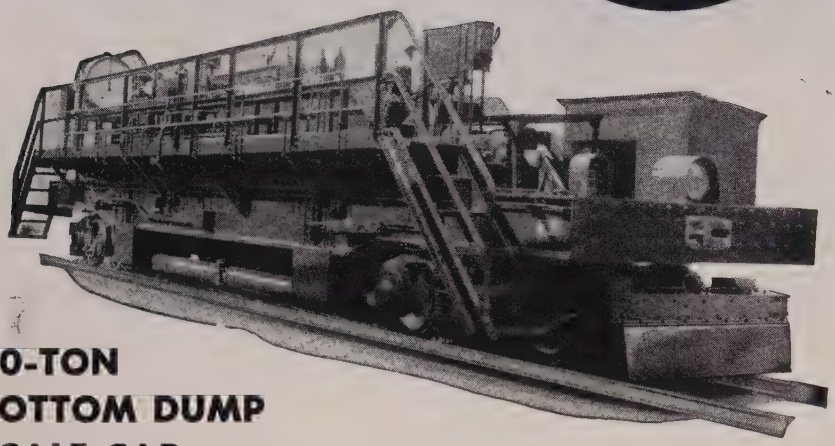
INDUSTRIAL RUBBER PRODUCTS

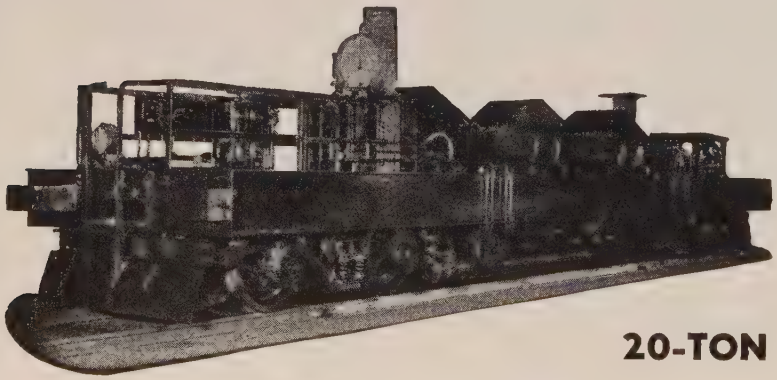
Built for STEEL MEN to give DEPENDABLE SERVICE

ATLAS CARS



40-TON BOTTOM DUMP SCALE CAR

Car has anti-friction bearings throughout, including axle mountings. Foot-operated "Dead Man" control is interlocked with air brakes to apply brakes automatically. Provided with Atlas all-steel scales and 30″ indicating dial. Type printing recorder attachment provides automatic weight registration at skip pit. All standard safety features, including red marker lights and lights for illuminating the front of the bin.



20-TON DOUBLE HOPPER BOTTOM DUMP SCALE CAR

Car has Atlas underslung suspension scales with Atlas 24″ scale dial with chart recording. Air brakes and air-operated discharge gates. Cast steel side-frame trucks with roller bearings.

Atlas Engineering Service is always at your service

THE ATLAS CAR & MFG. CO.

ENGINEERS MANUFACTURERS

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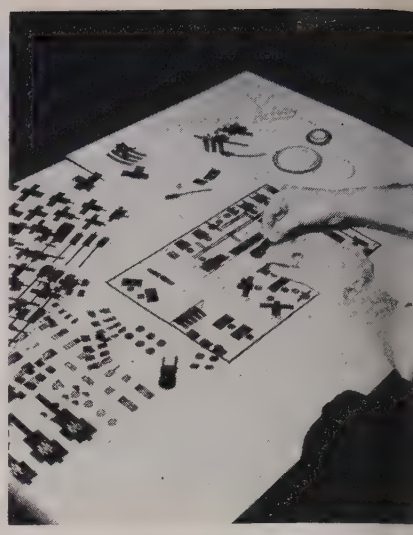


PLAN IN THE WORKS

. . . outlines stay tight in handlin

Layout Sans Drawing

HERE'S a method of getting quick and accurate plant layou picture down on paper witho measuring a single machine drawing a single picture. Resu is a clear and reproducible two-d mensional replica of the area as is, or as you want it to be.

Device is a product of Repr Templets Inc., Oakmont, P Here's how it works:

Glued Down—Silhouettes of t machinery, desks, benches and manner of equipment are cut fro the master planning file consisti of 5000 templets on film. The are then mounted with adhesive film grid sheets. Lines for aisl walls and divisions are put on t grid with narrow tape.

Finished picture can be view as is or reproduced on a bluepri ozalid, photostat or any other production machine.

Directory Charts Mesabi Mines

Publication of its annual co pilation, "Mining Directory of M nesota," is announced by the Min Experiment Station, University Minnesota, Minneapolis.

The directory is prepared in fo sections. The first contains ma showing location of mines and serve properties—the mines name, reserve properties by key letters and number. Also sho are principal beneficiation pla on the ranges. Part Two provid data on all properties that shipp ore or are listed on tax records

laving merchantable deposits. In ddition, taconite leases issued by he state are recorded.

In Part Three, a listing is made f all operating companies and ma- or holding organizations identified ith Minnesota ranges. Included a directory of officials, subsidi- ry and affiliated companies and roperties in which they are in- erested. Part Four provides gen- ral statistics on the industry, ables on reserve tonnages, etc.

ecruiting More Engineers

Bidding for new engineering chool graduates continues to be full-time operation for most in- ustries. Among the inducements ow employed by some firms to upplement visits by personnel to ollege campuses are booklets de- igned to help sell the embryo en- ineer on the advantages offered y a particular company.

One such effort, a booklet titled It's Your Future . . ." is being istributed by Monarch Machine ool Co., Sydney, O. Monarch's re- ruiting literature defines the ma- hine tool's place in industry, as- uring readers that their prospec- ve employer is getting a fair hare of the business therein. Also onsidered are the usual factors f prospects for progress within he organization, company policies nd location of the plant.

tress Formula Cuts Test Time

Development of high temperature aterials may be speeded with a tress formula credited to metal- rgical research engineers at Gen- ral Electric Co.'s Thompson Labo- atory, Lynn, Mass. The laboratory stimates a year's test time can be aved through application of the ormula.

The formula, relating strength ith time and temperature, has een transformed into a calculator perated like slide rule. Data ob- ained on short time acceptance sts are picked up by the calcula- r to determine long-time strength f metals under high temperatures.

Other benefits cited by GE in- ude possible increase in capacity f creep and rupture equipment. ata at intermediate temperatures an be obtained without cross plot-

'Surface'

USED FOR GALVANIZING pails, furn ace is set in the floor. Heat from 'Surfac direct-fired burners is thoroughly controlle Bath temperatures are maintained so tha rapid erosion of kettle and hot spots on kett walls are prevented.

Controlled HIGH HEAT input

for your galvanizing operation!

PRECISE, CONTROLLED HIGH HEAT INPUTS are essential for economical batch or continuous galvanizing . . and dependable part and product galvanizing results from a 'Surface' galvanizing furnace, because alloy layer is accurately controlled.

1. DIRECT-FIRED BURNERS above supply sufficient heat to compensate rapidly for heat losses due to addition of cold work and spelter to bath.

2. MINIMUM DROSS FORMATION results from the completely uniform and thoroughly distributed heat provided by direct-fired burners. This allows complete, satisfactory adhesion of coating to stock, maximum kettle life.

SETTINGS to meet all batch and continuous production requirements can be supplied.

WHEN NEXT YOU have a galvanizing problem, a 'Surface' industrial engineer will gladly discuss it with you. Better yet, write now for complete information. No obligation, naturally.

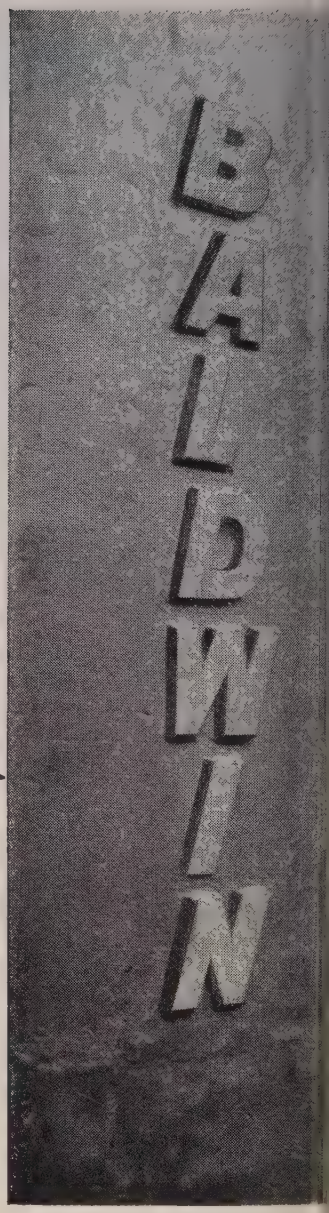
SURFACE COMBUSTION Corporation

TOLEDO 1, OHIO

'Surface' INDUSTRIAL FURNACES AND BURNERS

Kathabar HUMIDITY CONDITIONING SYSTEMS

Janitrol AUTOMATIC HEATING EQUIPMENT



....unique Compound Head cuts costs at Wyatt's

This *big* Baldwin plate planer at the Houston plant of Wyatt Metal and Boiler Works is a real cost-cutter with its versatile compound head and quick reversing action. The head can be hand fed through any angle from 30° below to 105° above the horizontal center. The tools have a 10″ horizontal travel and 9″ vertical travel. This combination of large linear travel and angular adjustment enables Wyatt to easily scarf and angle-finish plate edges without removal and turning of plate.

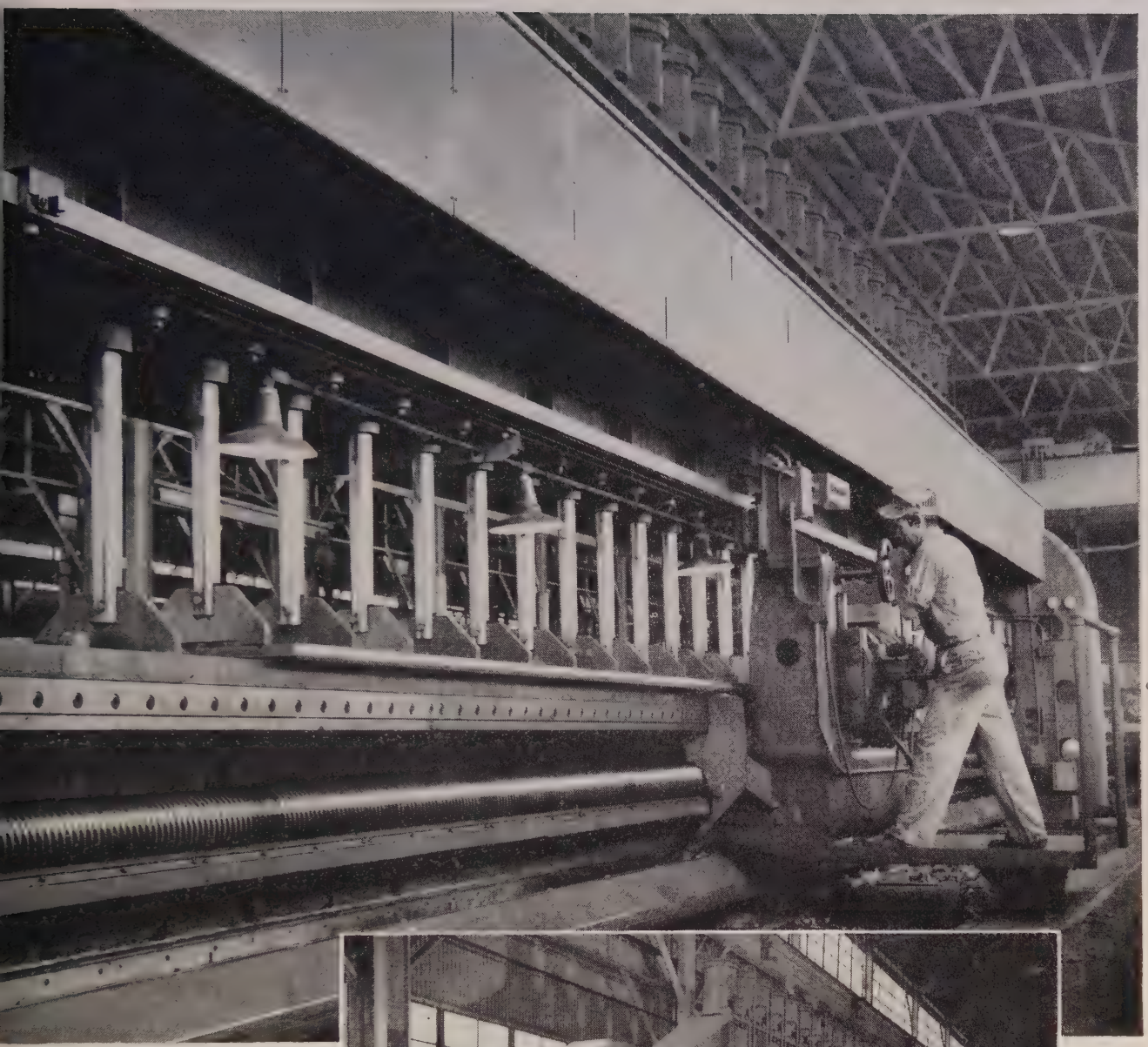
Since its installation, Wyatt has been able to appreciably reduce the time required to bevel steel plate and has made substantial reductions in their production costs.

If you are in the market for either a standard or special plate planer —or any type of mechanical or hydraulic press—contact your nearest Baldwin representative. For more than 100 years we have been designing and building large, close tolerance equipment for the metal working industry. You'll find this experience invaluable in helping you to select equipment that will exactly do your job —and do it with maximum efficiency and satisfaction.

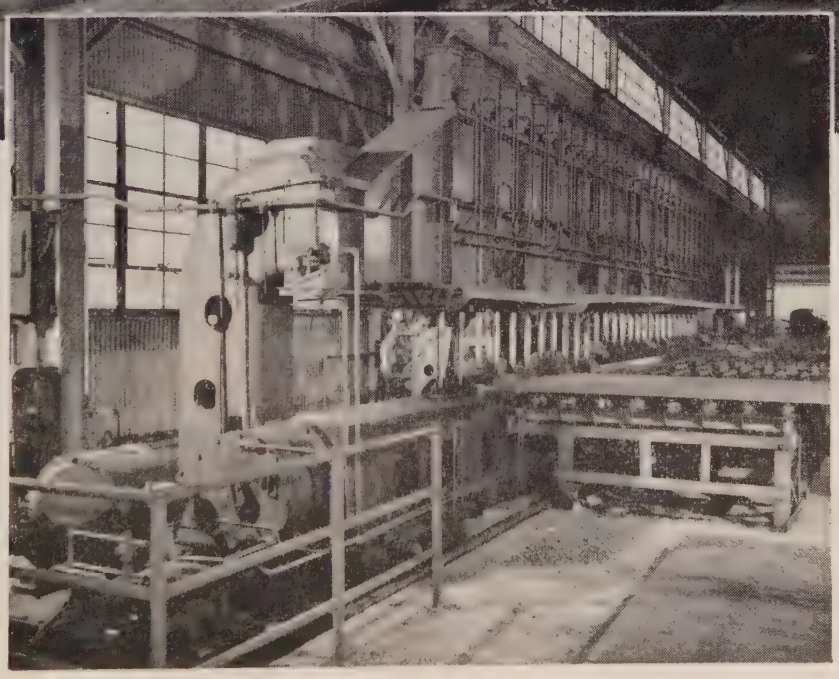
BALDWIN BLH LIMA-HAMILTON

Eddystone Division
BALDWIN-LIMA-HAMILTON CORP.
Philadelphia 42, Pa.
Offices in Principal Cities

BALDWIN-LIMA

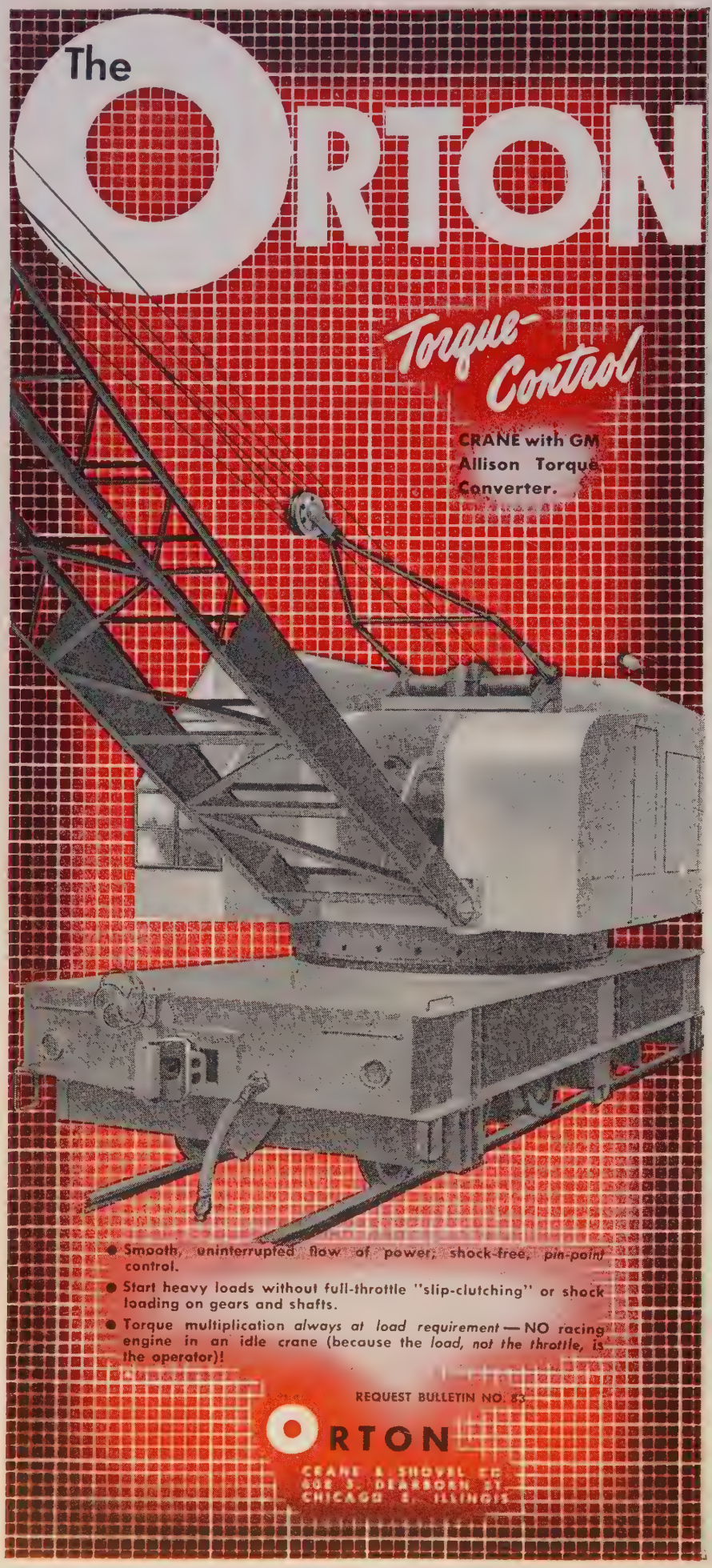


63 feet in overall length, this Baldwin planer machines plates up to 40 feet long. Cylinders can be used in groups to minimize air consumption. Maximum clamping pressure is 270,000 pounds.



Speed of carriage is adjustable from 15 feet to 60 feet per minute. Reversing is smooth and easy because of dynamic braking that slows down and reverses motor at the end of each stroke. Solenoids lift toolholders on the back stroke to prevent tool drag.

-HAMILTON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ORTON
Torque-Control
CRANE with GM Allison Torque Converter.
● Smooth, uninterrupted flow of power, shock-free, pin-point control.
● Start heavy loads without full-throttle "slip-clutching" or shock loading on gears and shafts.
● Torque multiplication always at load requirement — NO racing engine in an idle crane (because the load, not the throttle, is the operator)!
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CHICAGO 5, ILLINOIS

ting and complete alloy ruptu characteristics can be represent by a single curve, facilitating co parison with other materials.

AISE Schedules Show

Technical sessions scheduled the Association of Iron & Steel E gineers will be held concurrent with the association's biennial Ir and Steel Exposition. T. V. E managing director says the int grated schedules should permit i dustry men attending to take a vantage of both exhibits and tec nical program.

Sessions will be divided into se arate morning and afternoon p grams that permit those attendi to hear a representative group discussions on their preferr phase, including design, constru tion, operation and maintenan Other topics to be considered a lubrication, training and standar ization.

The exposition is expected draw about 10,000 representativ from iron, steel and allied indu tries to Cleveland's Public Au torium. Headquarters for the fo day convention will be at the Ho Cleveland. Show opens Sept. closes Oct. 3. AISE members is not required for attendance a there is no registration fee.

Western Resources Compiled

Basic reference source on e nomic and technical resources the 11 Western states is provi by the Western Resources Ha book, compiled by Stanford search Institute. Ralph A. Cru SRI's director of research, says t handbook is not confined to natu resources. The largest section that devoted to industry, but formation is gathered on agric tural, manpower, and other sources necessary to a west economy.

Most statistics are given each year for the 30-year per 1920-1950. Mr. Kruse says sel tion of this period should prov an ample base for trend analy and forecasting studies. Beginn in September, new issues of 20— data sheets will be sent to s scribers periodically. About new sheets will be furnished nually.

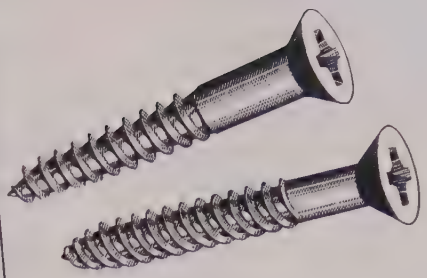
Personal
Memo to
The Purchasing Agents and Engineers of Industry—
May we be of help to you?
We are at your service

from

AMERICAN SCREW COMPANY

Makers of

AMERICAN PHILLIPS Screws



American PHILLIPS Wood Screws with sharp gimlet points, sharp threads, well-formed heads.

American PHILLIPS "TWINfast" Wood Screws with twin threads for greater driving speed.

American PHILLIPS Machine Screws for fastest driving in drilled or tapped holes (or with nuts).

American PHILLIPS Type 23 Thread-Cutting Screws, for metals.

American PHILLIPS Type 1 Thread-Cutting Screw taps its own thread in metal *as it's driven.*

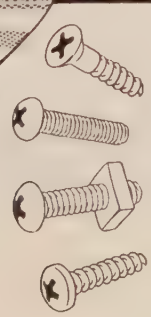
Above and below are shown American PHILLIPS Sems* Assemblies, preassembled lock washers and screws save assembly time.

*(U. S. PATENTS NO. 2,113,424 AND 2,113,425.)

American PHILLIPS Type B Tapping Screws, for assembling heavy sheet metal.

American PHILLIPS Type A Tapping Screws, for faster fastening of light-gage sheet metal.

SINCE 1838

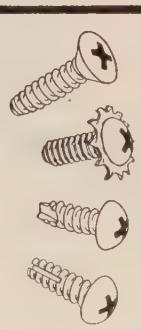


AMERICAN SCREW COMPANY

PHILLIPS HEADquarters

WILLIMANTIC, CONNECTICUT

Main Office & Plant
Willimantic, Conn.
Office & Plant, Norristown, Pa.
Office & Warehouse, Chicago, Ill.



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Only 27¾ Inches Longer than the Load

MODEL PAL

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If you have a material handling problem that requires minimum "operation area", ask about the "Walkie" MOTO-TRUC. Its application in close areas is making history every day . . . write for complete information on all the advantages of MOTO-TRUC.

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MOTO-TRUC *Designers* FOR THE INDUSTRY PATENTED

CALENDAR OF MEETINGS

September 3, Steel Kitchen Cabinet Manufacturers Association: Fall meeting, Hotel Cleveland, Cleveland. Association address: Engineers Bldg., Cleveland 14. Secretary: Arthur J. Tuscany.

September 3-13, Centennial of Engineering Convocation Period: General manager, F. Edwards. Address: 57th St. & S. Shore Drive, Chicago 37.

September 4-5, National Conference on Industrial Hydraulics: Illinois Institute of Technology, sponsor, Hotel Sherman, Chicago. Institute address: Technology Center, Chicago 16. Conference secretary: John Duba.

September 4-6, American Institute of Chemical Engineers: Palmer House, Chicago. Institute address: 120 E. 41st St., New York 17. Secretary: Stephen L. Tyler.

September 8-9, National Society of Lubrication Engineers: National symposium on fundamentals of friction and lubrication engineering, Hotel Sherman, Chicago. Society address: 343 S. Dearborn St., Chicago 4. Secretary: W. F. Leonard.

September 8-10, American Standards Association: National standardization conference, Museum of Science & Industry, Chicago. Association address: 70 E. 45th St., New York 17. Secretary: G. F. Hussey Jr.

September 8-11, American Institute of Mechanical Engineers: Fall meeting, Hotel Sheraton, Chicago. Society address: 29 W. 39th St., New York 18. Secretary: C. E. Davies.

September 8-12, Instrument Society of America: Annual fall meeting and exhibit, Public Auditorium & Hotel Cleveland, Cleveland. Society address: 921 Ridge Ave., Pittsburgh 12. Secretary: Richard Rimbach.

September 9-11, Society of Automotive Engineers: National tractor meeting, Hotel Schroeder, Milwaukee. Society address: 29 W. 39th St., New York 18. Secretary: J. A. C. Warner.

September 9-13, American Chemical Society—Chicago Section: National chemical exposition, Chicago Coliseum, Chicago. Address: 86 E. Randolph St., Chicago 1.

September 10-12, Porcelain Enamel Institute: Shop Practices Forum, University of Illinois, Urbana, Ill. Institute address: 1145 19th St. NW, Pont Circle Bldg., Washington 6. Secretary: John C. Oliver.

September 11, American Iron & Steel Institute: Regional technical meeting, Palmer House, Chicago. Institute address: 350 Fifth Ave., New York 1. Meeting director: Frank H. Ireland.

September 11-14, Packaging Machinery Manufacturers Institute: Annual meeting, The Homestead, Hot Springs, Va. Institute address: 342 Madison Ave., New York 17.

September 14-17, National Automatic Merchandising Association: Annual meeting and exhibit, Palmer House, Chicago. Association address: 7 S. Dearborn St., Chicago. Secretary: C. S. Darling.

September 14-18, Pressed Metal Institute: Annual fall meeting, Pocono Manor, Pa. Institute address: 2860 E. 130th St., Cleveland 20. Manager: Orrin B. Werntz.

September 14-19, American Chemical Society: Fall meeting, Atlantic City, N. J. Society address: 1155 16th St. NW, Washington. Executive secretary: Alden H. Emery.

September 14-20, Concrete Reinforcing Steel Institute: Semi-annual fall meeting, The Broadmoor, Colorado Springs, Colo. Institute address: 38 S. Dearborn St., Chicago. Secretary: H. C. Delzell.

September 15-17, Allied Railway Supply Association: Annual meeting, Hotel Sherman, Chicago. Association address: 109 N. Wabash Ave., Chicago 2. Secretary: Charles F. Weil.

September 18, Material Handling Institute: Hotel Cleveland, Cleveland. Institute address: 731-732 DuPont Circle Bldg., Washington 6. Managing director: R. Kenneth Hanson.

September 19, The Wire Association, Nonferrous Division: First regional meet-

(*Continued on p.* 132)

BIG JOB for welding . . .

and RADIOGRAPHY adds "OK"

Here you see the lower drum of a large stationary boiler. All seams of the shell are welded. So are the extensions and elbows. And every weld has been radiographed to prove it sound. For radiography would reveal any serious lack of fusion or gas porosities.

Knowing each weld to be sound, the designer of a pressure vessel can save weight, cut cost, and improve its efficiency.

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EASTMAN KODAK COMPANY
X-ray Division, Rochester 4, New York

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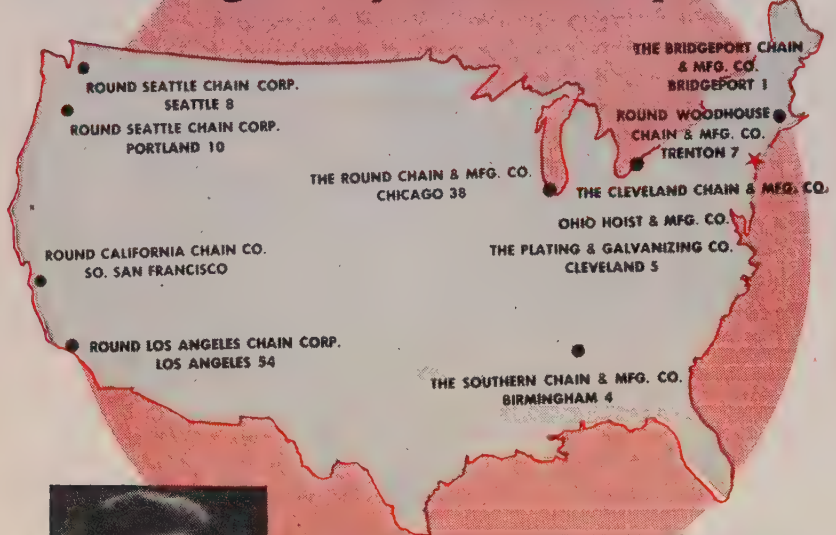
Round CHAIN COMPANY

right in your territory!



W. J. KEENAN

ROUND WOODHOUSE CHAIN & MFG. CO.— established in 1884 — joined the nationwide Round organization in 1936. Under the management of Willis J. Keenan, who has been a Round Chain man for 15 years, Woodhouse now offers *a complete line* of welded and weldless chain, slings, chain hoists, electric hoists and trolleys to the important Middle Atlantic market. *Sold exclusively through distributors and wholesalers.*

Chain for Every Need! Security in Every Link!

A COMPLETE LINE OF WELDED AND WELDLESS CHAIN

SLING CHAINS • LOG CHAINS • HOIST CHAINS

HOISTS • HOOKS • FITTINGS AND ATTACHMENTS

Round CHAIN COMPANIES

THE OLDEST NAME IN ROUND CHAIN

(*Concluded from p. 130*)

Elton Hotel, Waterbury, Conn. Association address: 453 Main St., Stamford, Conn. Executive secretary: Richard E. Brown.

September 19-20, Automotive Engine Rebuilders Association: Midyear meeting, board of directors, Edgewater Beach Hotel, Chicago. Association address: 419 N. Capitol Ave., Indianapolis. Executive vice president: R. G. Patterson.

September 22-23, Steel Founders' Society of America: Fall meeting, The Homestead, Hot Springs, Va. Society address: 920 Midland Bldg., Cleveland 15. Secretary: F. Kermit Donaldson.

September 22-24, National Truck Body Manufacturers Association: Annual meeting, Muehlebach Hotel, Kansas City, Mo. Association address: DuPont Circle Bldg., Washington. Secretary: Shipley D. Burton.

September 22-25, American Mining Congress: Metal & nonmetallic mineral mining conference, Denver. Congress address: 1102 Ring Bldg., Washington 6. Secretary: Julian Conover.

September 24-26, American Hot Dip Galvanizers Association Inc.: Fall meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: 1506 First National Bank Bldg., Pittsburgh. Secretary: Stuart J. Swennson.

September 28-October 2, National Screw Machine Products Association: Fall membership meeting, The Broadmoor, Colorado Springs, Colo. Association address: 2860 E. 130th St., Cleveland 20.

September 29-30, American Machine Tool Distributors Association: Annual meeting, The Cavalier, Virginia Beach, Va. Association address: 1900 Arch St., Philadelphia 3. Executive secretary: Thos. A. Fernley.

September 29-Oct. 2, American Institute of Steel Construction Inc.: Annual convention, Empress Hotel, Victoria, B.C. Institute address: 101 Park Ave., New York 17. Executive vice president: L. Abbett Post.

September 30-October 3, Association of Iron & Steel Engineers: Fall meeting and exhibit, Hotel Statler and Public Auditorium, Cleveland. Association address: 1010 Empire Bldg., Pittsburgh 22. Director: T. V. Ess.

OCTOBER

October 3-5, Society of Industrial Designers: Annual meeting, Shawnee Inn, Shawnee-on-Delaware, Pa. Society address: 48 E. 49th St., New York 17. Secretary: Sally G. Swing.

October 6-7, Rail Steel Bar Association: Fall meeting, Hotel Cleveland, Cleveland. Association address: 38 S. Dearborn St., Chicago. Secretary: W. H. Jacobs.

October 6-10, National Hardware Show: Grand Central Palace, Atlantic City, N. J. Managing director: Frank Yeager.

October 9, American Iron & Steel Institute: Regional technical meeting, William Penn Hotel, Pittsburgh. Institute address: 350 Fifth Ave., New York 1. Meeting director: Frank Ragland.

October 11-14, National Association of Waste Material Dealers Inc.: Fall meeting, Los Angeles. Association address: 271 Madison Ave., New York. Secretary: Clinton M. White.

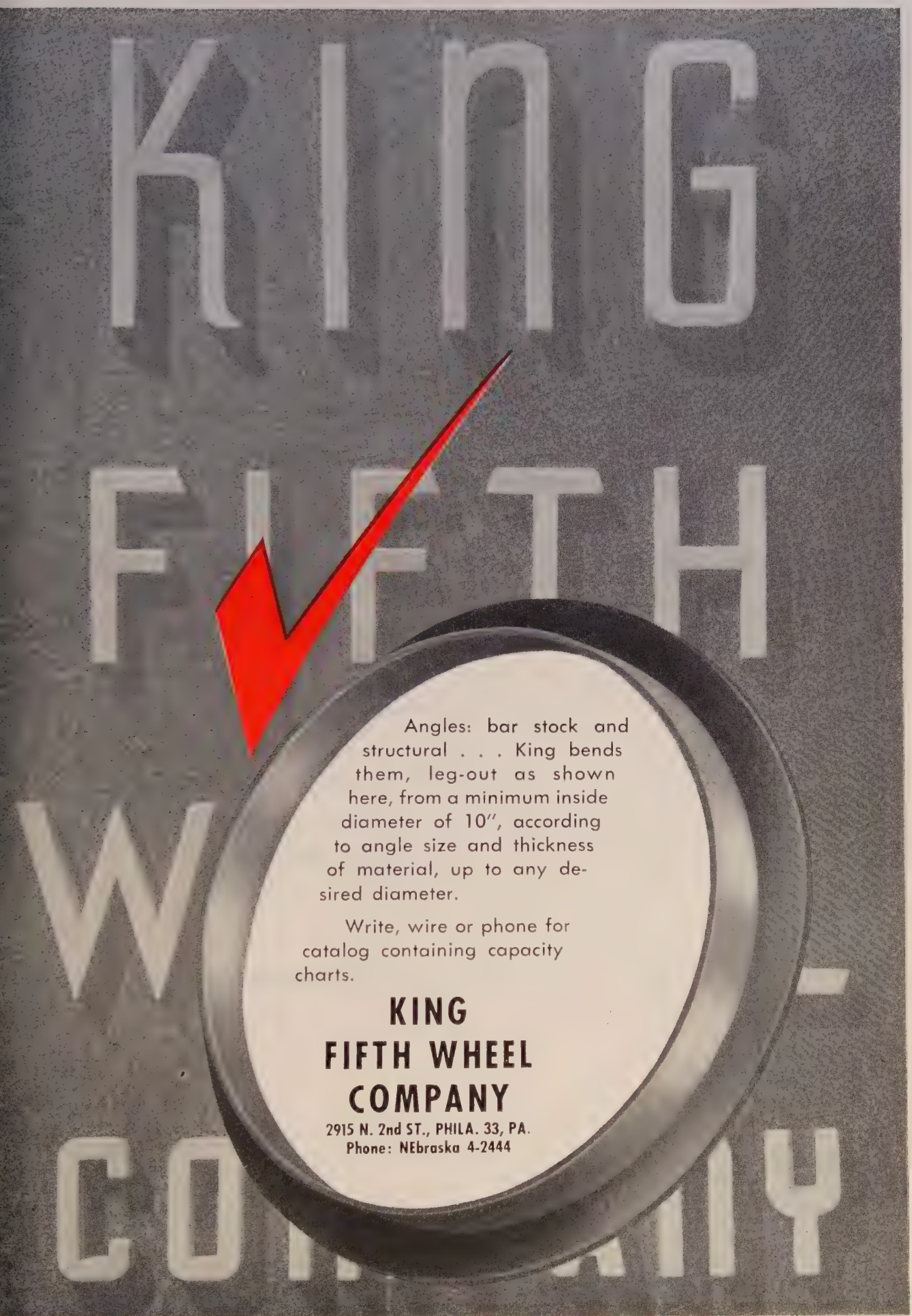
October 13-17, American Institute of Electrical Engineers: Fall general meeting, New Orleans, La. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

October 16-17, Gray Iron Founders' Society Inc.: Annual meeting, Hotel Cleveland, Cleveland. Society address: 210 National City-E. 6th St. Bldg., Cleveland. Secretary: Donald H. Workman.

October 16-18, Foundry Equipment Manufacturers Association: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: Engineers Bldg., Cleveland 14. Secretary: Arthur J. Tuscany.

October 19-21, Conveyor Equipment Manufacturers Association: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: No. 1 Thomas Circle, Washington 5. Executive vice president: R. C. Sollenberger.

October 20-24, National Metal Congress & Exposition: Convention Hall, Philadelphia. Secretary: W. H. Eisenman, 7301 Euclid Ave., Cleveland 3.



Angles: bar stock and structural . . . King bends them, leg-out as shown here, from a minimum inside diameter of 10", according to angle size and thickness of material, up to any desired diameter.

Write, wire or phone for catalog containing capacity charts.

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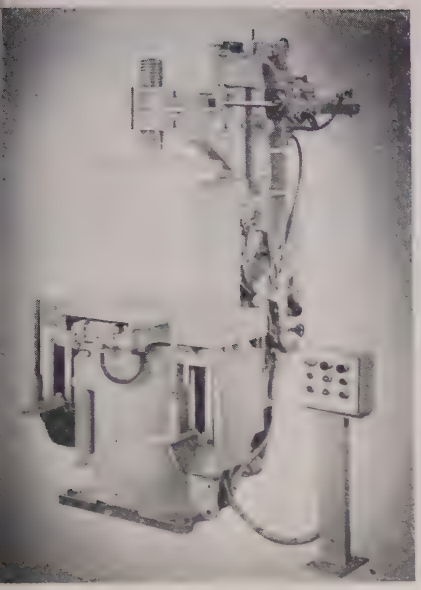
UNITED STATES STEEL

STEEL



HIGH PRODUCTION MOLDER
. . . has 16,000-pound squeeze capacity

Automatic Molding Machine

USE REPLY CARD—CIRCLE No. 1

Jolt-squeeze-strip draw machine, the model 2160-C, made for high production of uniform standard molds, is announced by SPO Inc., 6494 Grand Division Ave., Cleveland 25, O. Improved pushbutton-type electrical controls govern all operations, providing either fully automatic or manual control.

Jolting action is timer-controlled; squeeze is regulated by a pressure switch. Stripping action also is controlled automatically to eliminate dependence on operator's judgement. Machine's stripping pins are adjustable to accommodate a large range of flask sizes.

The model's squeeze capacity is 16,000 pounds; jolt capacity, 1500 pounds on standard 80 psi line pressure. Pattern draw is 10 inches; maximum squeeze stroke, 12 inches. Flask space ranges from 19 to 31 inches, left to right, and from 16 to 31 inches, front to back.

Polarizing 'Scope Simplified

USE REPLY CARD—CIRCLE No. 2

American Optical Co., Buffalo 15, N. Y., offers a simplified polarizing microscope for crystallography, chemical microscopy, and petrography. The model P45 is equipped with A. O. Spencer optics, provides magnifications up to 430X. Built into the stable, completely enclosed substage is a permanently aligned full field illuminator providing good optical performance with apertures up to 0.66.

Substage polarizer consists of a special polarizing disk mounted between optical glass and placed above a heat absorbing plate. Disk-type diaphragm allows rapid selection of five different size apertures. Angle measurements can be estimated readily to 1 degree. The single, large ring-type stage clip accommodates 45 and 75-mm slides.

REPLY CARDS

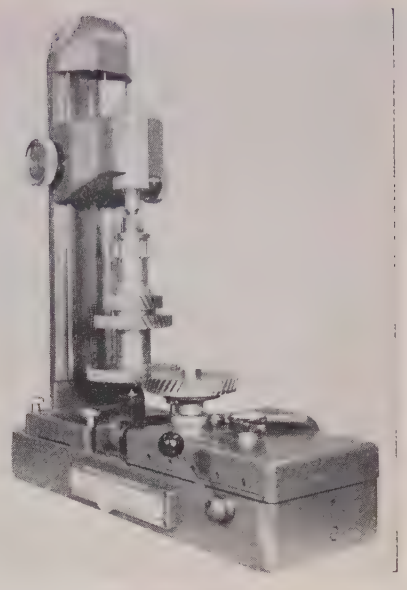
on page 149 will bring you more information on any new products and equipment in this section.

Leveler Eliminates Rehandling

USE REPLY CARD—CIRCLE No. 3

Improved leveling device, designed for plant or warehouse use, is announced by Service Caster & Truck Corp., Albion, Mich. Design improvements include a centrifugal governor, installed to act as an emergency brake. Action of top and bottom automatic stops is made more positive. The unit is employed to move material through a plant having different floor levels, or to load goods onto trucks or boxcars without removal from the original carrier. This function serves to eliminate rehandling.

Loads up to 6000 pounds can be raised 5 feet in 50 seconds. Unit can be used for in-plant or outside operations. It is powered by a fully enclosed 1-hp electric motor of the intermittent type. No subsurface preparation is necessary before installation. Base plates can be bolted to the floor for quick mounting or the leveler can be furnished with casters for portable operation.



ADJUSTABLE GEAR TESTER
. . . indicates errors in size, eccentricity

Gear Rolling Fixture

USE REPLY CARD—CIRCLE No. 4

Gear rolling fixture with column-type workhead is offered by National Broach & Machine Co., 5600 St. Jean Ave., Detroit 13, Mich. Its use indicates errors in size and eccentricity of work gear. Adjustable workhead is set at precise center distance from the master gear spindle carried on a floating spring-loaded slide.

When the work gear is rolled in mesh with master gear, errors indicated are read directly on a dial indicator actuated by any movement of the master gear slide. Column-type workhead assures maximum rigidity. The counterbalanced upper center facilitates rapid setup. Unit is spring-loaded to ease loading and unloading.

Outdoor Power Circuit Breakers

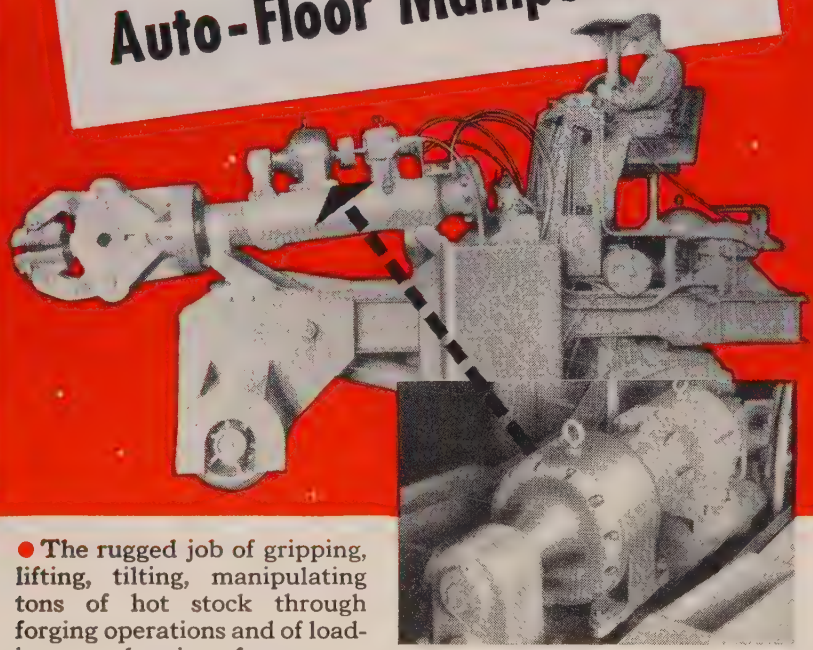
USE REPLY CARD—CIRCLE No. 5

Outdoor power circuit breakers for distribution or subtransmission applications are announced by Switchgear Dept., General Electric Co., Schenectady 5, N. Y. Breakers are available in ratings of 14.4 to 46 kv, 600 and 1200 amp and in interrupting ratings from 250 through 1500 mva. Oilblast interrupters used on the breakers, are designed to reduce oil carbonization by interrupting fault and load

under the twists and shocks of mighty hammer blows

WINSMITH® SPEED REDUCERS

stand up indefinitely on Brosius Auto-Floor Manipulators



● The rugged job of gripping, lifting, tilting, manipulating tons of hot stock through forging operations and of loading or drawing furnaces — such extreme service conditions subject Brosius Auto-Floor Manipulators to a terrific beating. And day after day they take it and like it, and roll back for more!

For very good reasons, Salem-Brosius, Inc., the manufacturer, is a consistent user of Winsmith Speed Reducers for rotation of tongs heads at 22 to 24 rpm on capacities up to two tons. First, they stand up to the twist and shock of forging operations which are imparted to the spindle and transferred through the speed reducer. Second, they are compact, and being forward of the operator they do not obstruct his view of work being done.

The Winsmith (pat.) Differential Gear Reducer used on the Brosius Manipulator is unique among speed reducers. With it, in one single stage in the same housing, reduction ratios of 1.1:1 to 50,000:1 are obtained smoothly and silently — without need of extra parts.

Good to remember: within the range of 1/100 to 85 hp, Winsmith's four basic speed reducer designs — differential, worm gear, helical gear and worm-helical — provide the most complete line available from any one manufacturer.

Write for informative catalog No. 148.

WINSMITH, Inc.
14 EATON ST.
Springville (Erie County), N. Y.

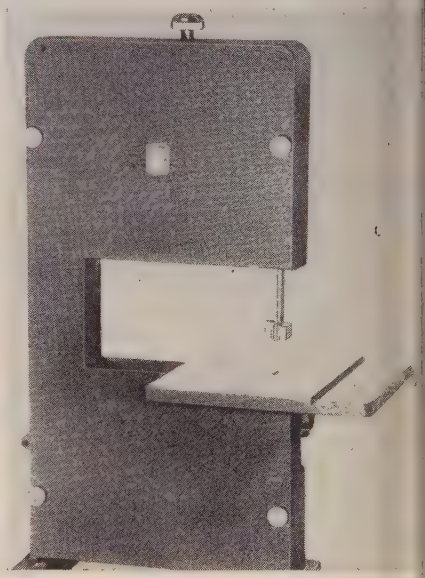
MEMBER OF AGMA

currents with short arc lengths and low arc energy. Interrupters have silver-molybdenum contact surfaces for low contact resistance and minimum erosion of contact material during interruption of fault arcs. They can be removed easily for contact inspection without disturbing breaker adjustments.

Metal Cutting Band Saw

USE REPLY CARD—CIRCLE No. 6

Operating within limits of a 5⅜-inch throat capacity, the model 4[illegible] metal cutting band saw is announced by Tomlee Tool & Engineering Co., 718 Washington Ave. North, Minneapolis 1, Minn. In larger machine shops, the saw is made to operate as an auxiliary



. . . work table tilts to 45 degrees

unit to a large cutting machine. Work table tilts to 45 degrees and is grooved to take a mitre gage for angle or compound cuts. Made of heavy cast iron and working on ball bearings throughout, it operates at four speeds. Available as optional equipment is a ½-h motor.

Mortising Attachment Improved

USE REPLY CARD—CIRCLE No. 7

For making square end mortises more quickly and accurately, South Bend Lathe Works, S. Bend 2[illegible] Ind., offers an improved mortising attachment.

The operating unit consists of a fence assembly that bolts to the drill press work table, a mortising chisel holder that clamps to the

STEEL

J&L OTISCOLOY
HIGH STRENGTH STEEL
Helps Make Friends for Penn Body Division of Hockensmith Corporation

J&L STEEL

Rock from Penn-Lincoln Parkway job drops into Robinson Company truck. J&L Otiscoloy body members and J&L heat-treated Jalloy plate bed floor assure long truck body service life.

E. F. Robinson Co. Reports Otiscoloy Truck Bodies Increased Payloads, Gave Longer Service Life with Lower Maintenance Costs

Mr. E. F. Robinson, President of the E. F. Robinson Company, Pittsburgh, Pa., reports extra-long service life—maximum payloads from 15 dump trucks built with bodies and supporting members of J&L Otiscoloy high-strength steel.

Fabricated by the Penn Body Division of the 75-year-old Hockensmith Corporation, and employed by Robinson in the construction of Pittsburgh's new Penn-Lincoln Parkway, the truck bodies have already stood up under 2½ years of punishing service.

In addition, J&L Otiscoloy's great strength permitted Penn Body to employ lighter sections in the truck construction—deadweight was cut and Robinson could haul bigger payloads inside the legal weight limits.

The result—Mr. Robinson will specify J&L Otiscoloy in any new truck body orders placed with Penn Body.

If you're operating or building equipment where deadweight cuts into payloads, and where impact, abrasion or corrosion limit service life, you'll find J&L Otiscoloy can help you, too. Here's why—

Compared to mild steel, Otiscoloy has 4 to 6 times greater resistance to atmospheric corrosion—greater resistance to fatigue and abrasion. Finally, Otiscoloy can be welded by any of the standard methods and can be readily cold formed.

Why not take a tip from other up-to-date operators? Send for a free copy of our booklet—"J&L Otiscoloy—the Transportation Steel." Better still, get in touch with the J&L representative nearest you today.

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COMPANY _____

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ARCOS GRADE	A.W.S. SPEC.
Tensilend 70	E7016
Tensilend 100	E10016
Tensilend 120	E12015
Manganend 1M	E9015
Manganend 2M	E10015
Nickend 2	E8015
Chromend 1M	E8015
Chromend 2M	E9015

Today's demand for increased production makes underbead cracking more costly than ever before. It means valuable time, money, and man-hours lost in rewelding. And there's no need for it. Facts prove that underbead cracking has never been known to occur on welding high tensile steels with "properly designed" low hydrogen electrodes.

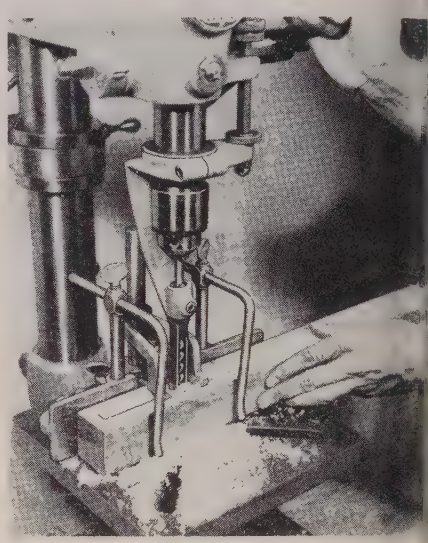
As a pioneer in this field, Arcos offers you the most complete line of Low Hydrogen Electrodes—ALL "properly designed" —and backed by the most rigid manufacturing controls in the industry. That's your assurance of consistently high quality weld metal for every job on high tensile steels. Arcos Corporation, 1500 South 50th Street • Philadelphia 43, Penna.

WELD WITH ARCOS

Specialists in Stainless, Low Hydrogen and Non-Ferrous Electrodes

drill press quill and three sizes of chisels and bits—¼, ⅜ and ½-inch.

The two guide arms, which are attached to the fence, adjust separately to handle irregularly shaped pieces. The fence has a 1-inch independent adjustment on the base. These flexible adjustments give the attachment capac-



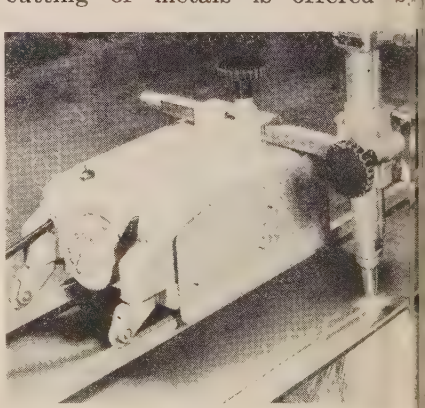
. . . guide arms handle irregular pieces

ities up to 5-11/16-inch under the forked hold-down and as much as 4-7/16-inch between the guide arms and fence. The attachment fits all of the company's drill presses and can be adapted to most other makes having a 1¾-inch quill and using a ½-inch chuck.

Portable Metalcutting Carriage

USE REPLY CARD—CIRCLE No. 8

Lightweight machine carriage for straight-line, bevel and circle cutting of metals is offered by



. . . with blowpipe, weighs 33¼ pounds

Linde Air Products Co., division of Union Carbide and Carbon Corp., 30 E. 42nd St., New York 17, N. Y. Machine, the Oxweld

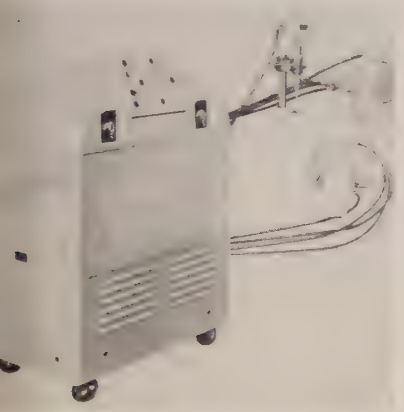
M-45, is also applicable for many pes of welding and flame-treat- g jobs. It is designed to supple- nt heavier equipment in larger nts, shipyards and mills. Weight 33¼ pounds, complete with blow- pe. Compact design makes it nvenient for use in close quar- rs where larger machines are im- actical.

Model is housed in a one-piece uminum casting and is powered a heavy-duty electrically rever- ble motor. Centrifugal-type gov- nor covers a stepless speed range 4 to 32 ipm. Controls consist a three-position motor switch, speed-control dial that can be reset or instantly adjusted at any me during operation, and a two- sition clutch lever.

roduction Duplicating Machine

E REPLY CARD—CIRCLE No. 9

Production duplicating machine r use with mill or lathe is of- red by Tracer Control Co., 595 Ten Mile Rd., Hazel Park, Mich. alled the Lodge & Shipley dupli-



. duplicates machined profiles automatica

tor, the device makes possible tomatic duplication of machined ternal and external profiles and ntours.

It exerts accurate control over o feeds of the machine for re- oducing difficult compound rves and 90-degree shoulders om a template, original model or rkpiece.

It acts as an attachment to the achine, but will not interfere en the machine is used on other rk. Duplicator can be moved m machine to machine as need ses, permitting any tool to which is applied to operate at normal

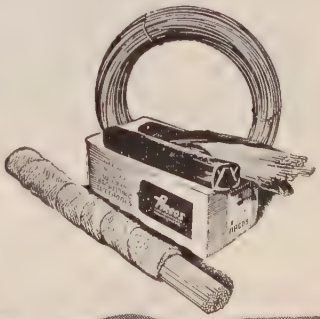
Use ARCOS Stainless Electrodes

Dependable weld performance on stainless fabrication requires weld metal with the correct chemical composition. And you want to be sure that the electrodes you use will produce the same dependable results on job after job.

The Arcos quality controls give you this assurance with every lot of Stainless Electrodes you receive. From the chemical analysis of the raw materials, to the analysis of actual weld metal, every control test is applied to assure you chemically correct weld metal at all times. In your own plant that can mean improved welding performance . . . fewer rejects . . . lower weld costs.

New chart of typical weld metal analysis tells what Arcos electrodes deliver. Copy on request. Arcos Corporation • 1500 South 50th Street • Philadelphia 43, Penna.

WELD WITH



ARCOS

Specialists in Stainless, Low Hydrogen and Non-Ferrous Electrodes

feeds and speeds in milling, turning, boring and shaping.

Air-Driven Screwdrivers

USE REPLY CARD—CIRCLE No. 10

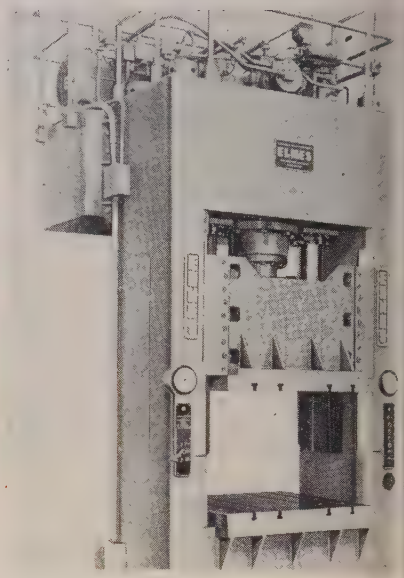
Midget air-driven screwdrivers and nut-setters are added to the line of portable air tools made by Master Pneumatic Tool Co. Inc., Orwell, O. The air tool series is used for driving nuts, bolts and screws in all types of assembly and subassembly operations. It is rated for driving screws to size No. 12 and for driving nuts and bolts up to ¼-inch diameter. Three types of mechanisms are adaptable to three different free speeds—580, 1200 and 2400 rpm.

Tools can be fitted with either pistol or lever-type throttle handles. They have spindle adapters for screwdriver bits and nut socket adapters, providing a total of 36 different models. Tool weights range from $1\frac{3}{16}$-pound to 2½ pounds; they operate on air pressures from 80 to 100 pounds.

Drawing and Forming Press

USE REPLY CARD—CIRCLE No. 11

Special hydraulic circuit wit two pressure cycles is the featur of a 300-ton drawing and formin press made by Elmes Engineerin Division, American Steel Foundr 1150 Tennessee Ave., Cincinna 29, O. Operation is controlled ele trically through two foot switche The ram exerts low tonnag through activation by one foo



. . . hydraulic circuit has two cycles

switch, high tonnage under co trol of the second switch.

Press is arranged for pressu reversal as well as position r versal. Simple crank handle f operating limit-switch controls located on the left and inchin down handwheel at the right of t operator. Handwheel permits o erator to move the platen down little as 1/16-inch at a time, exer ing precise control in die settin A thermostat in the reservoir a tomatically stops press operati if the oil reaches a critical temper ture.

Platen Press Introduced

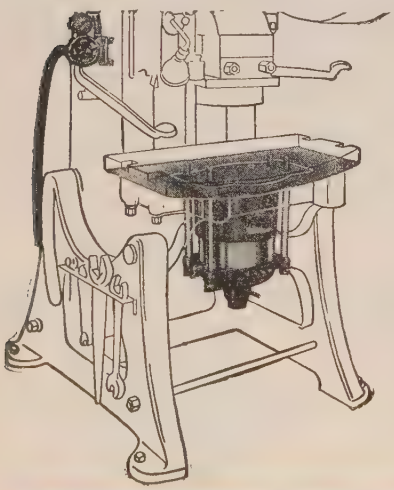
USE REPLY CARD—CIRCLE No. 12

Platen presses made in 10 500-ton capacities are introduc by Rodgers Hydraulic Inc., Minn apolis 16, Minn. Presses are ava able with square or rectangul platens, up or down-acting, 90-d gree angle transfer frame and t transfer. Maximum deflection dd not exceed 0.0005-inch per inch span on each of the work plate

DEEP DRAWS
AT LOW COST

WITH PNEUMATIC DIE CUSHIONS

There is a Dayton Rogers Pneumatic Die Cushion for every punch press requirement. Uniform draw ring pressure for any specific draw is maintained through the use of a combination reducing regulator and gauge, making possible deeper draws for any one operation. They also provide a practical and accurate means of pressure pad control on most forming dies.



Dayton Rogers Pneumatic Die Cushions are recognized leaders in their field. There are well over 15,000 in use! Standard sizes for all inclinable presses are carried in stock for immediate delivery.

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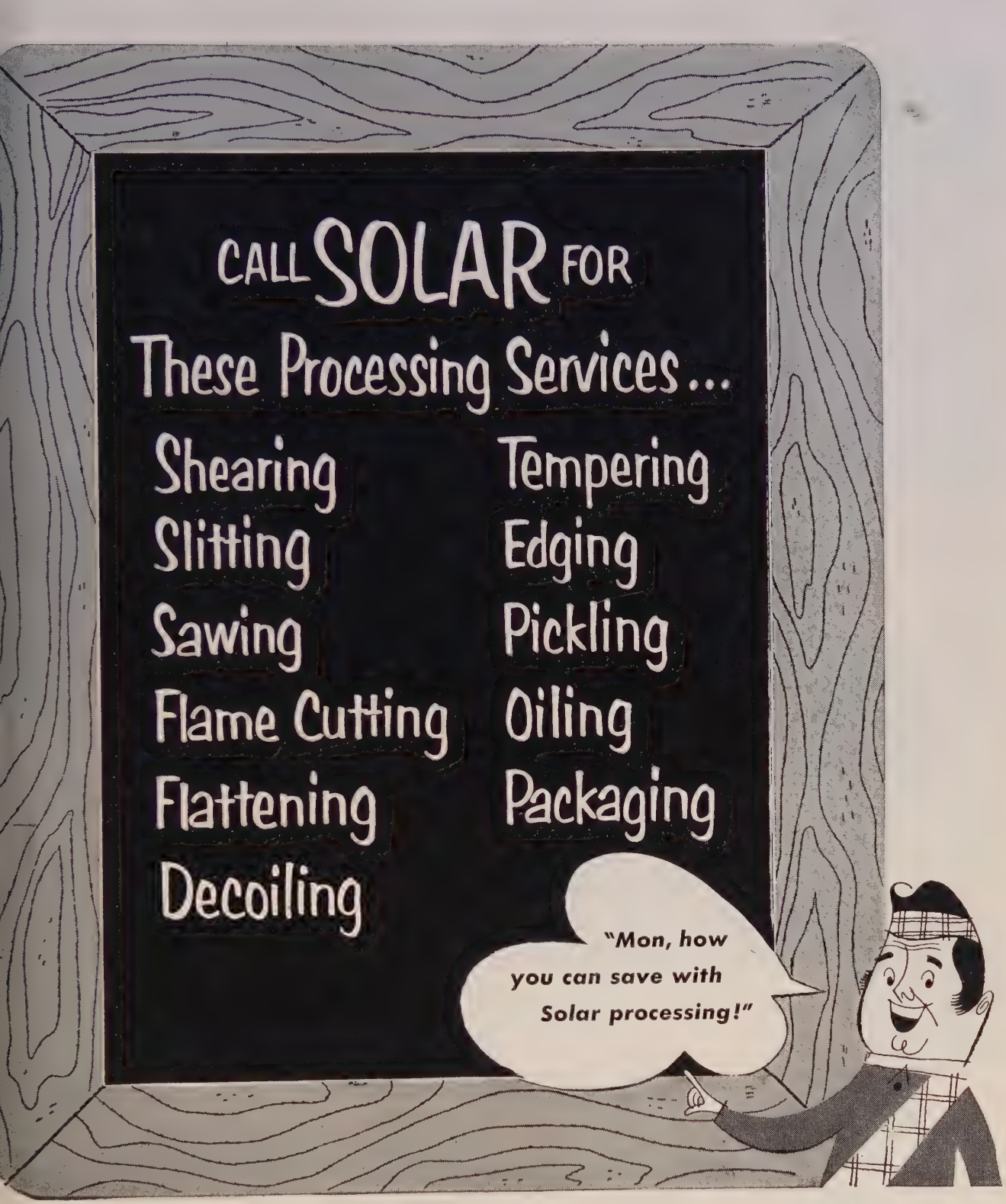

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DEPENDABLE AS THE SUN STEEL SERVICE

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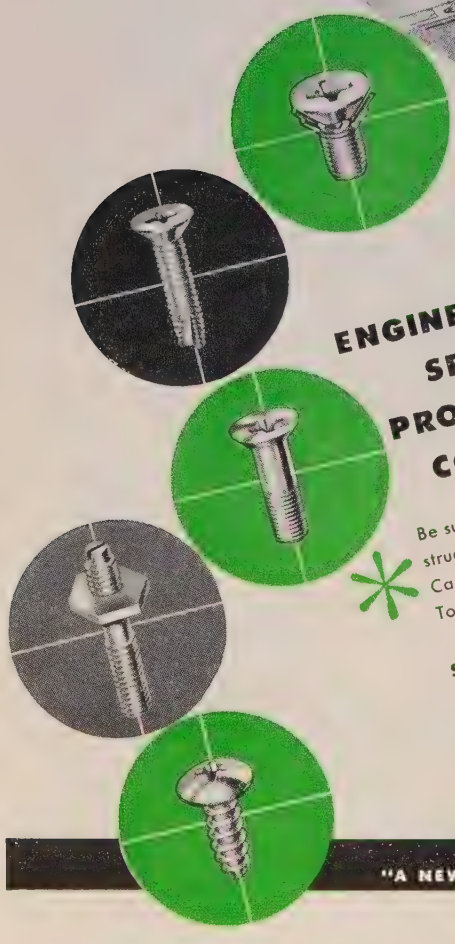

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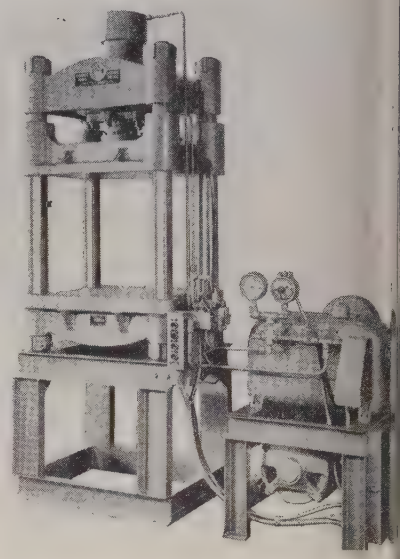
when the full rated load is applie uniformly over the entire workin area. Heavier construction can b supplied where work requires les than the 0.0005-inch deflection.

Two-speed hydraulic hand pum develops a maximum pressure o 10,000 psi, with automatic shif Power-driven pump, 2 or 4-cylin



. . . maximum deflection, 0.0005-inch

der, delivers oil 2½ or 5½ gallo per minute. For faster approa and return speeds, the powe driven pumps can be furnish with auxiliary pumps or accumu tors. All presses are availa with single or double-acting cyl ders.

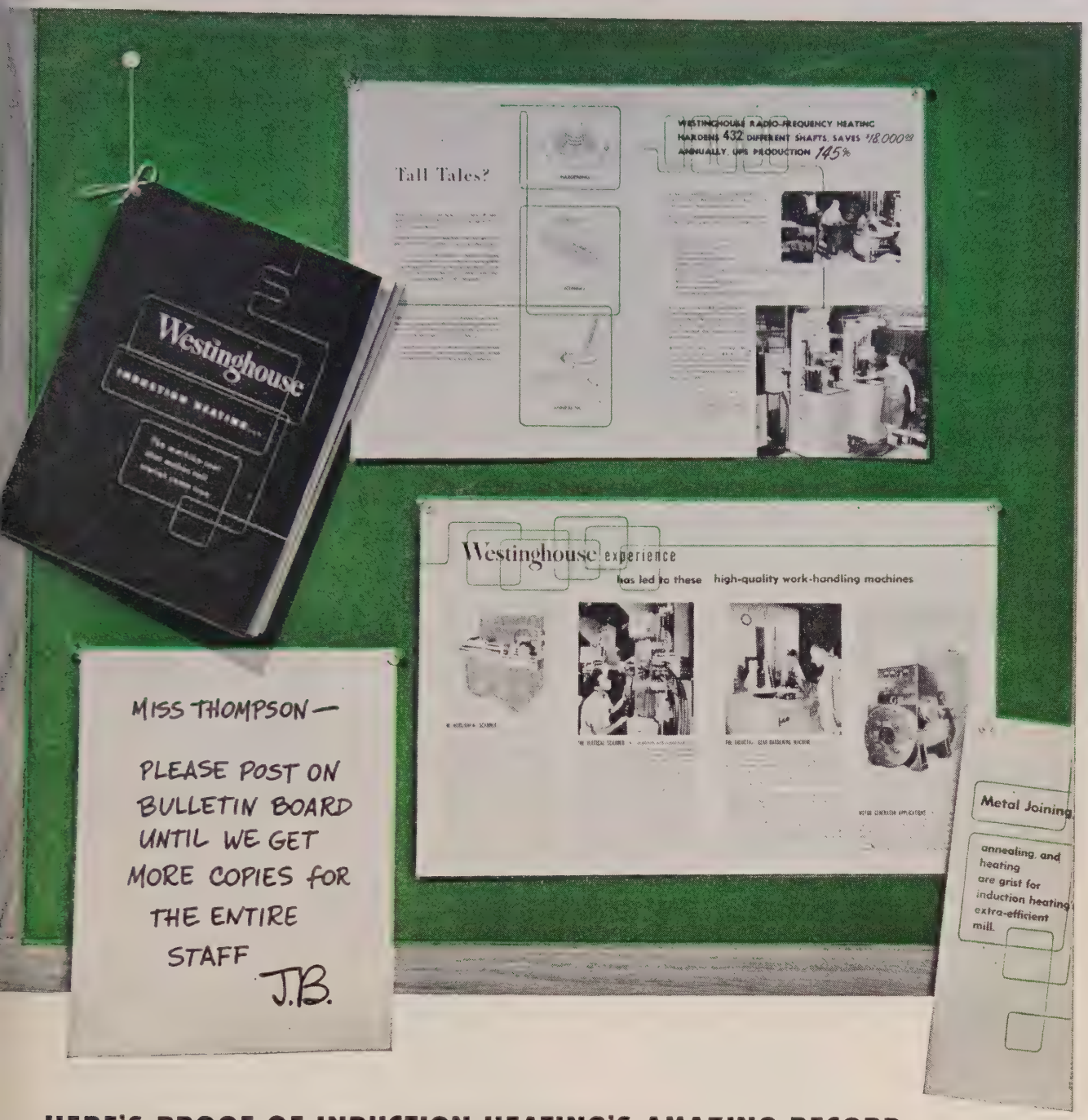
Centrifugal Pumps Redesigned

USE REPLY CARD—CIRCLE No. 13

Redesigned line of horizont multistage centrifugal pumps f medium pressure application is a nounced by Ingersoll-Rand Co., Broadway, New York 4, N. Pumps are intended for services 800 pounds. They are built in 1 2, 2½ and 3-inch sizes, availa with 4, 6 or 8 stages.

Horizontally-split, smooth - bo cylindrical casing contains t unit-type rotor assembly. This a sembly is composed of the sha impellers and channel rings. completely balanced rotor is a sured through the multiple-volu design that eliminates radial thru through the full range of operati conditions.

Back-to-back grouping of i pellers neutralizes axial thrust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Actual case histories of hardening, brazing, soldering, and annealing installations show how the RF process has meant increased production (as high as 2000%), lower costs (as much as 90%), and a higher quality product for many of America's leading manufacturers. It's an amazing story — with facts and figures released by the companies themselves — and results that speak for themselves. See how these manufacturers' experiences may parallel your own . . . how RF Heating may help achieve production efficiency in *your* plant.

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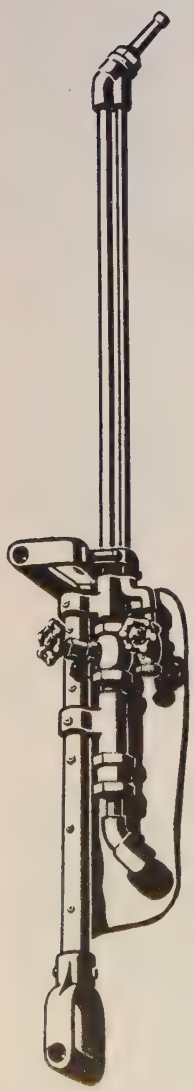
I USE AN OAKITE STEAM GUN FOR ALL THE HARD JOBS. IT SAVES TIME AND MONEY



This happy man has found the answer to all the tough cleaning problems.

He knows the best way to clean metal parts that are too large to be soaked in tanks or conveyed through washing machines.

He knows the best way to strip paint from large parts and large surfaces that can't be soaked.

He knows the best way to clean large equipment such as:

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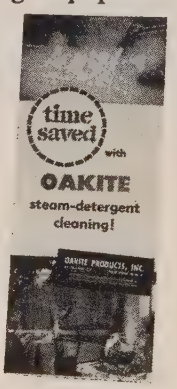
- stamping machines
- motors



He knows his Oakite Steam Gun will do practically every cleaning job that's too big or too difficult to do by ordinary methods.

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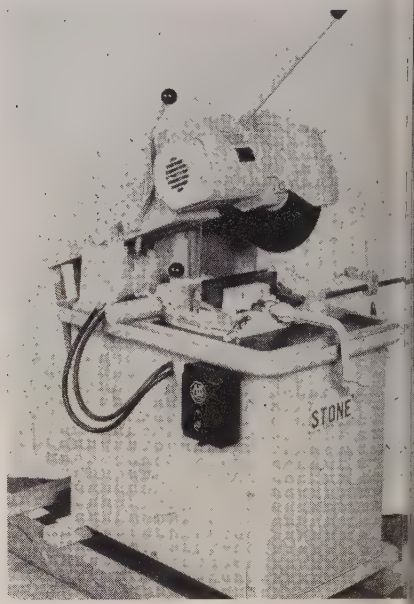
veloped by the pressure differential across each individual stage

Continuous Cutoff Machine

USE REPLY CARD—CIRCLE No. 14

Stone Machinery Co., 649 Fayette St., Manlius, N. Y., offers its M75 cutoff machine designed for heavy, continuous production cutting on all ferrous and nonferrous metals. Principle improvement is



. . . power increased from 5 to 7½ hp i

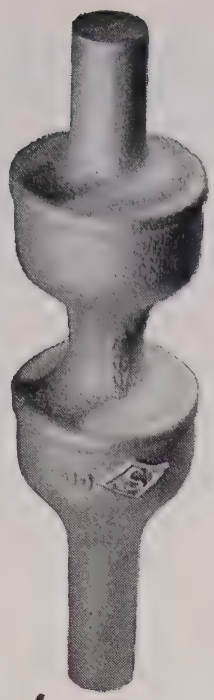
made in the cutting head where power is increased from 5 to 7½ hp. To facilitate continuous production cutting, a work stop and air activated vise are available as optional equipment.

Indoor-Outdoor Crawler Lift

USE REPLY CARD—CIRCLE No. 15

Development of the crawler fork-lift, called Terra-Lift, is announced by American Tractor Corp., Churubusco, Ind. The unit is designed to meet a demand for handling equipment that can work both indoors and outdoors on all types of terrain. This model operates outside in any kind of weather, but uses rubber tracked shoes to work with equal efficiency inside warehouses and factories.

In addition to applications of the fork-lift, the truck can be converted quickly for applications of the bulldozer, angle dozer, loader, or other jobs not commonly performed by fork-lifts. It is available in 2000, 4000 and 6000-pound



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Sivyer Castings may not inspire many long, low whistles, but they shape up nicely, nonetheless. Their high dimensional accuracy, clean cored holes, absence of excess metal, and unusually good finish are appreciated by manufacturers with a sharp eye for better casting values. Sivyer "plus" features mean savings for you, too . . . in less handling . . . lower machining time . . . in longer, more dependable casting life. That's why it pays to specify castings carrying the Sivyer Ⓢ

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capacities and in 6-foot, 8-foot 7-inches and 12-foot lifts.

Container Sprays Belt Dresser

USE REPLY CARD—CIRCLE No. 16

Liquid belt dressing, Grako (R) Clear, is repackaged in a 12-ounce spray container by the manufacturer, Grayton & Knight Co., Worcester 4, Mass. Depressing valve with forefinger directs a powerful spray at belts and pulley faces. Package contains enough liquid to treat about 350 sq ft of belting. A fine mist, directed at the smaller pulley face where slippage is most likely to occur, is transferred evenly to the belt and absorbed quickly.

Tool Holder and Adaptor Set

USE REPLY CARD—CIRCLE No. 17

Triple Lock P.D.Q. tool holder with a locking feature that permits fast tool changes and assures constant repositioning is announced by Portage "Double-Quick" Tool Co., Akron, O. Three point holding of taper shank design eliminates runout on precision work. The 57-piece set includes holders for boring, milling and lathe applications. Also included are adaptors for shell mills, end mills, drill chucks and boring heads.

Industrial Vacuum Cleaner

USE REPLY CARD—CIRCLE No. 18

MCV-205B, a lightweight industrial vacuum cleaner, introduced by Multi-Clean Products Inc., St. Paul, Minn., features a tank with 5-gallon capacity. It has wet or dry pickup ability. Standard equipment includes: 8 foot by 1¼-inch flexible vac hose, two-piece curved wand, fabric type filter, 12-inch floating brush floor tool for rugs and carpets, 9-inch brush tool for bare floor, 5-inch upholstery tool and flat fiber nozzle.

Anchor Bolt Assemblies

USE REPLY CARD—CIRCLE No. 19

Super-Grip Anchor Bolt Co. Inc., Philadelphia 40, Pa., has developed single and double anchor bolt assemblies. After insertion of anchor bolt, lead sleeve and patented cup-shaped steel anchor, a tamping tool mushrooms lead first. Repeated blows flatten out steel anchor driving its ribbed steel edges into wall of hole. Steel reinforces lead and provides a solid anchorage that prevents bolts from loosening.

Static-Free Conveyor Belt

USE REPLY CARD—CIRCLE No. 20

For safely conveying materials under conditions in which a static charge is either undesirable or dangerous, Main Belting Co., Philadelphia 47, Pa., offers a static-free belt. Mark 40 is a heavy duty stitched canvas belt with a smooth, conductive neoprene coating that dissipates any static charge before it is built up.

Protective Relay

USE REPLY CARD—CIRCLE No. 21

Type CO protective relay, a slow-speed overcurrent type with inverse or very inverse time characteristics, is available from Westinghouse Electric Corp., Pittsburgh 30, Pa. Used principally for protection of transmission and distri-

use DURISITE
CEMENT

DURISITE is the furane based cement that gives you better constructed, more versatile, longer lasting, corrosion-resistant masonry. It's the cement that resists weak and strong acids, weak and strong alkalies, and all solvents. It's the cement that handles acids and alkalies alternately. It's the cement that gives you the tightly-bonded, extra-thin joints that are so all-important to a rugged floor or sturdy tank lining.

What's more, Durisite is quick-setting and chemical hardening. It's dense and non-porous with a water absorption of less than ½ of 1%. It has high compressive strength. It's non-toxic. And, it can be stored indefinitely, without deterioration.

If you're planning some corrosion-resistant masonry, be sure to use Durisite. It's the means to the end of expensive maintenance, repair, or premature failure. Write, today, for full information.

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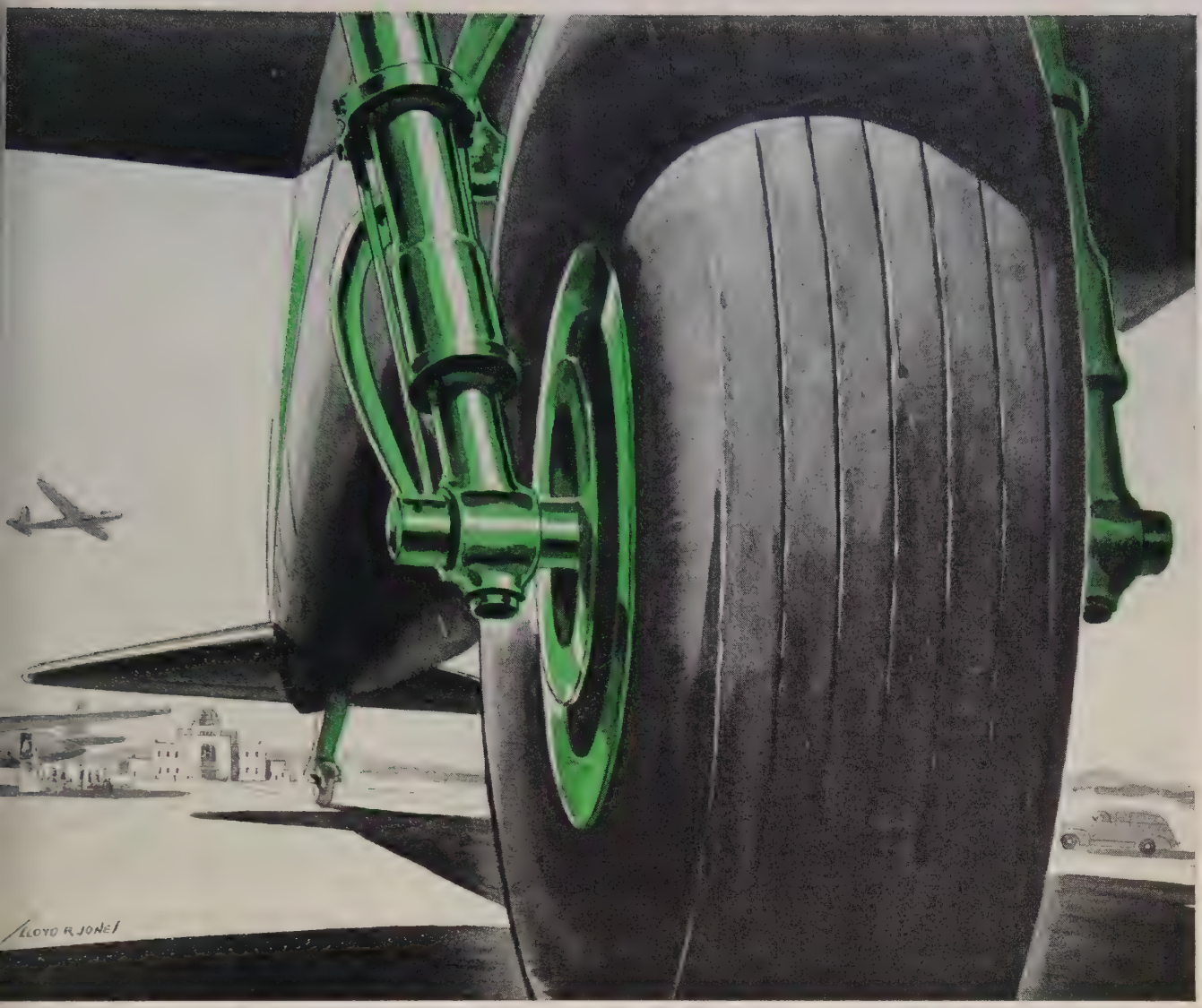
AKRON 9, OHIO
PROCESS EQUIPMENT DIVISION



Legs for lethal eagles

Legs for lethal eagles — hydraulic landing gear that cushion Uncle Sam's big bombers as they come down to roost — this is just one of the many uses of OSTUCO Tubing by manufacturers in the progressive aircraft industry. Aircraft designers are specifying OSTUCO Tubing for fuel lines, engine mounts, landing gear, and many other applications because of its inherent strength without weight characteristics and the ease with which it can be machined, formed and fabricated to the most exacting requirements.

But whether your products are aeronautical or of a distinctly different nature, you owe it to your future to investigate the advantages of OSTUCO Tubing for improving quality and reducing cost.

We cannot always promise early delivery estimates on new civilian orders, because of military demands, but it will pay you to consult our experienced engineers about OSTUCO Tubing when redesigning your products to meet future competition.

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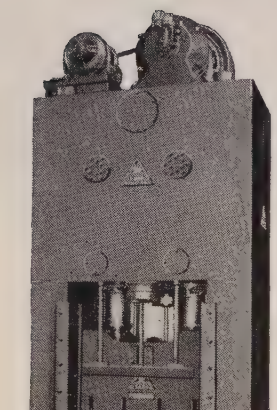
"streamlined" is the word for Alice

She's just a white-collar girl—an office secretary—but if you're an American manufacturer you'd better keep an eye on Alice Porter. Whether your product is used in the office or the home, the nod of her blonde head controls your cash register.

Typewriters, files, vanity cases or pots and pans—Alice likes 'em streamlined. That means smooth, light in weight, strong without bulk. And *that* means (although Alice doesn't know it) produced on presses.

Up-to-date press methods cater to popular demands and reduce costs at the same time. Was there ever a better formula for expanding a market? It's no secret—your competitors know it, too. Get in touch with us to see how your product can be improved, and production costs cut, with one or more Clearing presses.



CLEARING MACHINE CORPORATION
6499 WEST 65th STREET • CHICAGO 38, ILL.
HAMILTON DIVISION, HAMILTON, OHIO

CLEARING PRESSES

CMC CLEARING

THE WAY TO EFFICIENT MASS PRODUCTION

bution lines, units are offered i three ranges: 0.5 to 2.5 amp, 2 t 6 amp, or 4 to 12 amp. Relay available in either standard pro jection or Flexitest case.

Battery Charge Indicator

USE REPLY CARD—CIRCLE No. 22

A battery charge indicator fo industrial trucks is announced b Gould - National Batteries Inc Trenton, N. J. It is mounted s operator can see the dial at a times. The Wheatstone bridge-typ instrument is adjustable for 3, 12, 15, 18 and 24-cell batteries.

Wire Measuring Unit

USE REPLY CARD—CIRCLE No. 23

Tums wire measuring unit, o fered by Hykon Mfg. Co., Alliance O., consists of meter and take reel mounted on lightweight ste framework. Meter takes wire, ro and other flexible material up 1-inch diameter. It registers u to 1000 feet and instantly resets zero.

Photoelectric Controls

USE REPLY CARD—CIRCLE No. 24

Improved photoelectric contro available from Autotron Co., Da ville, Ill., offer protection again light source or tube filame failure, tube warm-up protecti and positive-lock tube shields. safety relay in the photoamplifi circuit will not close until amplifi is warmed up ready to operate.

Phenolic Resin Coatings

USE REPLY CARD—CIRCLE No. 25

Two types of phenolic resin coa ings are introduced by Ric-W Plastic Coating & Mfg. Cor Cleveland 15, O. Ricwilite 1060 of the baking or heat hardeni type. When baked at 350 to 40 F, coating hardens to form a co rosion-resistant coating. Ricwili

USE A **REPLY CARD**
Just circle the corresponding number of any item in this section for more information.

.00 is of the cold setting type at is polymerized at room temeratures (60-80° F) by addition f a catalyst prior to application.

djustable Speed Changer

E REPLY CARD—CIRCLE No. 26

Metron Instrument Co., Denver Colo., introduces a miniature adstable speed changer weighing ss than 6 ounces. Speed is conolled by an adjusting knob quipped with friction drag to preent ratio wander. Dial and pointer ndicate speed ratio.

nstrument Tubing Harness

SE REPLY CARD—CIRCLE No. 27

Dekoron Impervapak Poly-Cor, corrosion proof instrument tubng harness, is offered by Samuel Ioore & Co., Mantua, O. It is omposed of a bundle of polyethylne tubes over which is extruded a /16-inch sheath of black polythylene plastic of high molecular veight. It is impervious to attack y moisture, acids, alkalis and corosive industrial atmosphere.

All-Purpose Hand Blade

USE REPLY CARD—CIRCLE No. 28

Rocket high-speed hand blade is available from W. O. Barnes Co. Inc., Detroit 14, Mich. It is a lexible, safe blade with only the eeth hardened. Back is semihardened to retain flexibility.

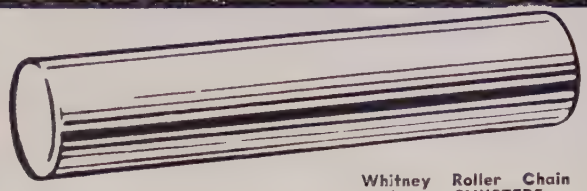
Heat Resistant Paint

USE REPLY CARD—CIRCLE No. 29

A gold-colored, extra high heat resistant paint designated as Heat-Rem XG-170 Gold is announced by Speco Inc., Cleveland, O. Made of copper flakes in a silicone base, it will withstand temperatures up to 1700° F and will air dry in 30 minutes. Paint prevents rust and is resistant to corrosion from mild acids, alkalies and industrial fumes.

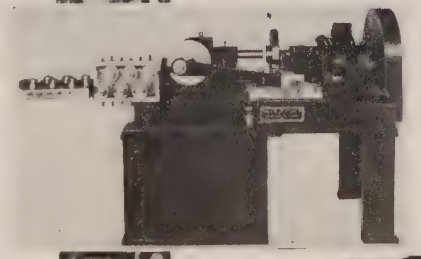
USE A
REPLY CARD
Just circle the corresponding number of any item in this section for more information.

8 important reasons why WHITNEY CHAIN CO. uses SHUSTER
WIRE STRAIGHTENERS & CUT OFFS



Whitney Roller Chain Pins, made on SHUSTERS, can be stood end on end, the cut is so true and clean.

1. Each SHUSTER delivers 7500 Whitney Roller Chain pins per hour.
2. Whitney Chain standards of length tolerances are easily maintained.
3. Straight lengths and square cut ends speed up assembly operations.
4. Each SHUSTER can be set for lengths from 0 to 10".
5. Fully automatic controls increase man-hour production.
6. Uses economical mill coiled rod stock. Costs less than mill straightened stock.
7. Pins are made as needed, simplifying inventory—keeping production on schedule.
8. SHUSTERS have generation-long dependability.



SHUSTER Automatic Slide Feed Machines such as these used by Whitney Chain, are specifically designed for accurate and square cutting of short lengths. SHUSTERS are available to handle round stock from .025" dia. to 11/16" dia. and up to 40' cut off length. Also shapes and tubing.

SHUSTER Since 1866
AUTOMATIC WIRE STRAIGHTENING & CUTTING MACHINES
Manufactured by METTLER MACHINE TOOL, INC.
132S LAWRENCE ST., NEW HAVEN, CONN.

Technical Data on Request

Mettler Machine Tool, Inc.
132S Lawrence St., New Haven, Conn.
Gentlemen: Please send us technical data.
We use wire from ...." to ...." dia. in lengths from ..... to.....
Name: .....
Company: .....
Address: .....

SCRAP

for your every requirement

LURIA BROTHERS AND COMPANY, INC.

CONSULT OUR NEAREST OFFICE FOR THE PURCHASE AND SALE OF SCRAP

PLANTS

LEBANON, PENNA.
READING, PENNA.
DETROIT (ECORSE), MICHIGAN
MODENA, PENNA.
PITTSBURGH, PENNA.
ERIE, PENNA.

MAIN OFFICE

LINCOLN-LIBERTY BLDG.
Philadelphia 7, Penna.

OFFICES

BIRMINGHAM, ALA.
Empire Building

CHICAGO, ILLINOIS
100 W. Monroe St.

HOUSTON, TEXAS
1114 Texas Av Bldg.

PITTSBURGH, PA.
Oliver Building

BOSTON, MASS.
Statler Building

CLEVELAND, OHIO
1022 Midland Bldg.

LEBANON, PENNA.
Luria Building

PUEBLO, COLORADO
334 Colorado Bldg.

BUFFALO, N. Y.
Genesee Building

DETROIT, MICHIGAN
2011 Book Building

NEW YORK, N. Y.
100 Park Avenue

READING, PENNA.
Luria Building

ST. LOUIS, MISSOURI
2052 Railway Exchange Bldg.

SAN FRANCISCO, CALIFORNIA
Pacific Gas & Elec. Co., Bldg.

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Berman

The Market Outlook

A LOOK beyond the current scramble for steel gives a hint the strike-inspired steel drought may be of short duration. You can even see such signs in the scramble.

In Detroit, some automotive men trying to appraise next year's demand believe intense competition for business will have returned. Their inclination is not to make long-term commitments for conversion steel, a costly product. One automaker is reported attempting to set up a conversion arrangement for only 30 days. Short runs of conversion work falling right into the period when mills are trying to work out from under a big backlog of orders are unattractive, so automakers are meeting only limited success in lining up what small amount of conversion steel they do want.

SURPRISE—In the Philadelphia area, some structural steel fabricating shops which thought they might run out of material before the flow of steel from mills could reach them again believe now they will be able to carry on without a break. Shape production has come back more rapidly than they expected, and they are not being pressed with new work.

Some consumers of hot-rolled carbon bars for civilian uses report their inventories are building up a little more rapidly than they had dared expect for this item which for some time has been in the tightest supply of all steel products.

NO PANIC—Warehouses too report finished steel is reaching them in somewhat heavier volume than they expected. At Chicago, the search for warehouse steel isn't as extensive as was anticipated. Reasons: Some lines of manufacture are soft, and steel inventories were not exhausted fully during the steel strike.

Although sheet consumers need steel they are not pressing as hard for tonnage as might be expected in light of the steel strike. Many of them had a fair cushion of inventories to meet the rather restricted volume of needs. Some flat-rolled specialties are in fairly easy supply. Straight chrome sheets are easy, although one large producer reports a very definite pick-up in demand. Some grades of silicon sheet can be had quickly.

TIGHT SPOT—Plates, which have been rating near bars in scarcity, continue in heavy demand, although from some areas there are reports plate fabricators have no large projects pending. Presently the increased load of defense requirements on sheet mills is hampering production of light plates on them.

There are noticeable contrasts in demand for merchant pig iron throughout the country. In some areas foundry iron is in light demand, with foundries operating only four days a week. In other areas, end of the steel strike revived foundry operations with a resultant rise in demand for iron.

SUBSTITUTE—One reason the steel drought resulting from the strike may be of only short duration is that there was strong belief the steel industry would not have to operate at capacity all through 1952 to meet demand. Perhaps the strike provided the downtime we otherwise might have had to reckon with late in the year.

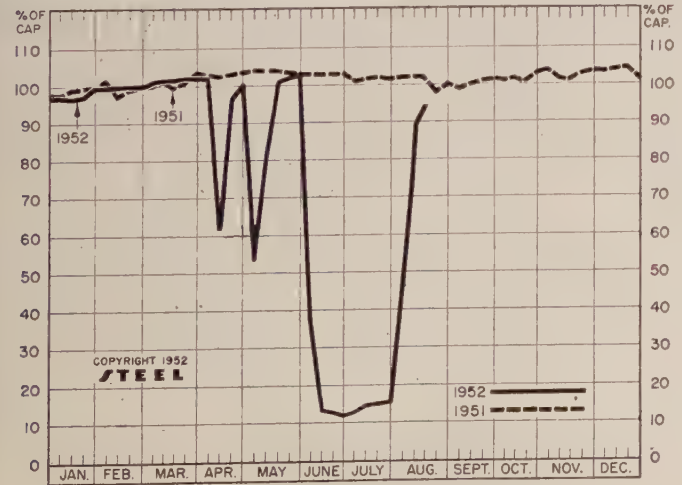
Other reasons why the steel drought may be broken sooner than might have been anticipated are the rebound of steel production after the strike and the record-high capacity of the steel industry.

PICK-UP—Production in the week ended Aug. 16 climbed to 94.5 per cent of capacity, a 5.5-point gain over the revised rate for the preceding week.

The steel strike cut steel production in the first seven months of this year to 46,637,256 net tons of steel for ingots and castings, a loss of 14,351,224 tons from the corresponding period of last year. July production of 1,605,000 tons of steel was the smallest monthly output since October, 1949, another strike period.

STIMULANT—Revival of steel production strengthened the outlook for steelmaking grades of scrap and firmed up prices, although buying is light. Cast grades of scrap too are stronger.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Capacity Engaged at Leading Production Points

	Week Ended Aug. 16	Change	Same Week 1951	Same Week 1950
Pittsburgh	93	+ 8	98	102
Chicago	97.5	+ 7.5*	105	101
Mid-Atlantic	87	+ 7	100.5	98.5
Youngstown	90	0	105	106
Wheeling	89	+25.5	98.5	96.5
Cleveland	103	+ 4*	101.5	101
Buffalo	109	+ 2.5*	104	104
Birmingham	97	+10	100	87
New England	80	+ 5	90	85
Cincinnati	50	+ 5*	106	103
St. Louis	104	+ 5	91.5	91
Detroit	106	— 2*	106	102
Western	102.5	+24.5	104	99
Estimated national rate	94.5	+ 5.5*	102	100

Based on weekly steelmaking capacity of 2,077,040 tons in 1952; 1,999,034 tons for 1951; 1,928,721 tons for second half, 1950; 1,906,268 tons for first half, 1950.

* Change from revised rate for preceding week.

The Metalworking Outlook—p. 57 Production-Engineering News—p. 93

Composite Market Averages

	Aug. 14 1952†	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39 av.=100) ..	171.92†	171.92†	171.92†	171.92	120.39
Index in cents per lb.	4.657†	4.657†	4.657†	4.657	3.261
ARITHMETICAL PRICE COMPOSITES:					
Finished Steel, NT	$106.32†	$106.32†	$106.32†	$106.32	$75.41
No. 2 Fdry, Pig Iron, GT..	52.54	52.54	52.54	52.54	36.11
Basic Pig Iron, GT	52.16	52.16	52.16	52.16	35.61
Malleable Pig Iron, GT ...	53.27	53.27	53.27	53.27	36.79
Steelmaking Scrap, GT ...	43.00	43.00	42.50	44.00	38.50

Weighted finished steel index based on average shipments and Pittsburgh district prices of the following 14 representative products during 5-year base period 1935-39: Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL Sept. 19, 1949, p.54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

† Preliminary.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	Aug. 14 1952†	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	3.70	3.70	3.70	3.70	2.90
Bars, H.R., Chicago	3.70	3.70	3.70	3.70	2.90
Bars, H.R., del. Philadelphia	4.252	4.252	4.252	4.20	3.28
Bars, C.F., Pittsburgh	4.55	4.55	4.55	4.55	3.55
Shapes, Std., Pittsburgh ..	3.65	3.65	3.65	3.65	2.80
Shapes, Std., Chicago	3.65	3.65	3.65	3.65	2.80
Shapes, del. Philadelphia ..	3.93	3.93	3.93	3.91	2.94
Plates, Pittsburgh	3.70	3.70	3.70	3.70	2.95
Plates, Chicago	3.70	3.70	3.70	3.70	2.95
Plates, Coatesville, Pa. ...	4.15	4.15	4.15	4.15	3.15
Plates, Sparrows Point, Md.	3.70	3.70	3.70	3.70	2.95
Plates, Claymont, Del.	4.15	4.15	4.15	4.15	3.15
Sheets, H.R., Pittsburgh ..	3.60–75	3.60–75	3.60–75	3.60–75	2.80
Sheets, H.R., Chicago	3.60	3.60	3.60	3.60	2.80
Sheets, C.R., Pittsburgh ..	4.35	4.35	4.35	4.35	3.55
Sheets, C.R., Chicago	4.35	4.35	4.35	4.35	3.55
Sheets, C.R., Detroit	4.55	4.55	4.55	4.55	3.70
Sheets, Galv., Pittsburgh ..	4.80	4.80	4.80	4.80	3.90
Strip, H.R., Pittsburgh ...	3.75-4.00	3.75-4.00	3.75-4.00	3.75-4.00	2.80
Strip, H.R., Chicago	3.50	3.50	3.50	3.50	2.80
Strip, C.R., Pittsburgh	4.65-5.35	4.65-5.35	4.65-5.35	4.65-5.35	3.55
Strip, C.R., Chicago	4.90	4.90	4.90	4.90	3.65
Strip, C.R., Detroit	4.85-5.60	4.85-5.60	4.85-5.60	4.85-5.60	3.70
Wire, Basic, Pittsburgh ...	4.85-5.10	4.85-5.10	4.85-5.10	4.85-5.10	3.675
Nails, Wire, Pittsburgh ...	5.90-6.20	5.90-6.20	5.90-6.20	5.90 6.20	4.25
Tin plate box, Pittsburgh..	$8.70	$8.70	$8.70	$8.70	$5.75
SEMIFINISHED					
Billets, forging, Pitts.(NT)	$66.00	$66.00	$66.00	$66.00	$56.50
Wire rods, $\frac{7}{32}$-$\frac{3}{8}$", Pitts. ..	4.10–30	4.10–30	4.10–30	4.10–30	2.825
PIG IRON, Gross Ton					
Bessemer, Pitts.	$53.00	$53.00	$53.00	$53.00	$37.00
Basic, Valley	52.00	52.00	52.00	52.00	36.00
Basic, del. Phila.	56.75	56.75	56.75	56.49	38.72
No. 2 Fdry, Pitts.	52.50	52.50	52.50	52.50	36.50
No. 2 Fdry, Chicago	52.50	52.50	52.50	52.50	36.00
No. 2 Fdry, Valley	52.50	52.50	52.50	52.50	36.50
No. 2 Fdry, del. Phila. ...	57.25	57.25	57.25	56.99	39.22
No. 2 Fdry, Birm.	48.88	48.88	48.88	48.88	33.38
No. 2 Fdry (Birm.) del. Cin.	56.43	56.43	56.43	55.33	38.25
Malleable, Valley	52.50	52.50	52.50	52.50	36.50
Malleable, Chicago	52.50	52.50	52.50	52.50	36.50
Charcoal, Lyles, Tenn.	66.00	66.00	66.00	66.00	44.00
Ferromanganese, Etna, Pa.	228.00	228.00	188.00	188.00	140.25*

F.o.b. cars, Pittsburgh. †Preliminary.

SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt, Pitts...	$44.00	$44.00	$44.00	$45.00	$39.50
No. 1 Heavy Melt, E. Pa. .	42.50	42.50	41.00	43.50	37.25
No. 1 Heavy Melt, Chicago.	42.50	42.50	42.50	43.50	38.75
No. 1 Heavy Melt, Valley..	44.00	44.00	44.00	45.00	40.00
No. 1 Heavy Melt, Cleve...	43.00	43.00	43.00	44.00	38.25
No. 1 Heavy Melt, Buffalo.	43.00	37.00*	37.00*	44.00	42.50
Rails, Rerolling, Chicago ..	52.50	52.50	52.50	52.50	46.25
No. 1 Cast, Chicago	48.50	48.50	45.00	49.00†	43.50

* Nominal. † F.o.b. shipping point.

COKE, Net Ton

Beehive, Furn, Connlsvl. ..	$14.75	$14.75	$14.75	$14.75	$11.50-12.50
Beehive, Fdry, Connlsvl. ..	17.00	17.00	17.00	17.50	14.00-15.00
Oven Fdry, Chicago	23.00	23.00	23.00	23.00	17.50

NONFERROUS METALS

Copper, del. Conn.	24.50	24.50	24.50	24.50	21.50
Zinc, E. St. Louis.....	14.00	13.50	15.00	17.50	10.50
Lead, St. Louis	15.80	15.80	15.80	16.80	14.80-14.85
Tin, New York 121.50	121.50	121.50	103.00	80.00	
Aluminum, del.	20.00	20.00	19.00	19.00	15.00
Antimony, Laredo, Tex. ..	39.00	39.00	39.00	42.00	33.00
Nickel, refinery, duty paid.	56.50	56.50	56.50	56.50	35.00

PIG IRON

F.o.b. furnace prices quoted under GCPR as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies published on second following page.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem,Pa. B2	$54.00	$54.50	$55.00	$55.50
NewYork, del.	....	58.28	58.78	...
Newark, del.	57.02	57.52	58.02	58.52
Philadelphia, del.	56.75	57.25	57.75	58.25
Birmingham District				
AlabamaCity,Ala. R2	48.38	48.88	....	...
Birmingham R2	48.38	48.88	....	...
Birmingham S9	48.38	48.88	....	...
Woodward,Ala. W15	48.38	48.88	....	...
Cincinnati, del.	....	56.43	....	...
Buffalo District				
Buffalo R2	52.00	52.50	53.00	...
Buffalo H1	52.00	52.50	53.00	...
Tonawanda,N.Y. W12	52.00	52.50	53.00	...
No.Tonawanda,N.Y. T9	....	52.50	53.00	...
Boston, del.	62.65	63.15	63.65	...
Rochester,N.Y., del.	55.02	55.52	56.02	...
Syracuse,N.Y., del.	56.12	56.62	57.12	...
Chicago District				
Chicago I-3	52.00	52.50	52.50	53.00
Gary,Ind. U5	52.00	....	52.50	...
IndianaHarbor,Ind. I-2	52.00	....	52.50	...
So.Chicago,Ill. W14	52.00	52.50	52.50	...
So.Chicago,Ill. Y1	52.00	52.50	52.50	...
So.Chicago,Ill. U5	52.00	....	52.50	53.00
Milwaukee, del.	54.17	54.67	54.67	55.17
Muskegon,Mich., del.	....	58.80	58.80	...
Cleveland District				
Cleveland A7	52.00	52.50	52.50	53.00
Cleveland R2	52.00	52.50	52.50	...
Akron,O., del. from Cleve.	54.61	55.11	55.11	55.61
Lorain,O. N3	52.00	....	....	53.00
Duluth I-3	....	....	52.50	...
Erie,Pa. I-3	52.00	52.50	52.50	53.00
Everett,Mass. E1	....	59.75	60.25	...
Fontana,Calif. K1	58.00	58.50	....	...
Seattle,Tacoma,Wash., del.	....	60.66	....	...
Portland,Oreg., del.	....	60.66	....	...
LosAngeles,SanFrancisco, del. ...	60.16	60.66	....	...
GraniteCity,Ill. G4	53.90	54.40	54.90	...
St.Louis, del. (inc. tax)	54.65	55.15	55.65	...
Ironton,Utah C11	52.00	52.50	....	...
Geneva,Utah C11	52.00	52.50	....	...
LoneStar,Tex. L6	48.00	*48.50	48.50	...
Minnequa,Colo. C10	54.00	55.00	55.00	...
Pittsburgh District				
NevilleIsland,Pa. P6	....	52.50	52.50	53.00
Pitts., N.&S. sides, Ambridge Aliquippa, del.	....	53.87	53.87	54.37
McKeesRocks, del.	....	53.54	53.54	54.04
Lawrenceville, Homestead, Wilmerding, Monaca, del.	....	54.16	54.16	54.66
Verona, Trafford, del.	....	54.69	54.69	55.19
Brackenridge, del.	....	54.95	54.95	55.45
Bessemer,Pa U5	52.00	....	52.50	53.00
Clairton,Rankin,So.Duquesne,Pa. U5	52.00	....	....	...
McKeesport,Pa. N3	52.00	....	....	53.00
Monessen,Pa. P7	54.00	....	....	...
Sharpsville,Pa. S6	....	....	52.50	53.00
Steelton,Pa. B2	54.00	54.50	55.00	55.50
Swedeland,Pa. A3	56.00	56.50	57.00	57.50
Toledo,O. I-3	52.00	52.50	52.50	53.00
Cincinnati, del.	57.47	57.97	....	...
Troy,N.Y. R2	54.00	54.50	55.00	55.50
Youngstown District				
Hubbard,O. Y1	52.00	52.50	52.50	...
Youngstown Y1	52.00	52.50	52.50	...
Youngstown U5	52.00	....	....	53.00
Mansfield,O., del.	56.65	57.15	57.15	57.65

* Low phos, southern grade.

PIG IRON DIFFERENTIAL

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which the base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion therof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson,O. G2, J1	$
Buffalo H1	

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$
Keokuk,Iowa, Openhearth & Fdry, frt. allowed K2	
Keokuk, OH & Fdry., 12½ lb piglets, 16% Si, frt. allowed K2	
Wenatchee,Wash., OH & Fdry., frt. allowed K2	

CHARCOAL PIG IRON, Gross Ton

(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles,Tenn. T3	$

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$
Steelton,Pa. B2	
Philadelphia delivered	
Troy,N.Y. R2	

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Semifinished and Finished Steel Products

Mill prices quoted under GCPR in effect to July 26, 1952; cents per pound except as otherwise noted. Changes shown in italics. Code numbers following mill points indicate producing company; key on next two pages.

GOTS, Carbon, Forging (NT)
ontana,Calif. K1 ..$79.00
unhall,Pa. U5 .....52.00
eattle S24 .....73.00

NGOTS, Alloy (NT)
etroit R7 .....$54.00
ontana,Calif. K1 ....80.00
ouston S5 .....62.00
idland,Pa. C18 .....54.00
unhall,Pa. U5 .....54.00
eattle S24 .....80.00

ELLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
essemer,Pa. U5 ....$56.00
larton,Pa. U5 .....56.00
nsley,Ala. T2 .....56.00
airfield,Ala. T2 .....56.00
ontana,Calif. K1 .....75.00
ary,Ind. U5 .....56.00
ohnstown,Pa. B2 .....56.00
ackawanna,N.Y. B2 ..56.00
unhall,Pa. U5 .....56.00
o.Chicago,Ill. U5 ....56.00
o.Duquesne,Pa. U5 ..56.00

Carbon, Forging (NT)
essemer,Pa. U5 .....$66.00
uffalo R2 .....66.00
anton,O. R2 .....66.00
lairton,Pa. U5 .....66.00
leveland R2 .....66.00
onshohocken,Pa. A3 ..73.00
etroit R7 .....69.00
nsley,Ala. T2 .....66.00
airfield,Ala. T2 .....66.00
ontana,Calif. K1 ....85.00
ary,Ind. U5 .....66.00
eneva,Utah C11 .....66.00
ouston S5 .....74.00
ohnstown,Pa. B2 .....66.00
ackawanna,N.Y. B2 ..66.00
osAngeles B3 .....85.00
unhall,Pa. U5 .....66.00
eattle B3 .....85.00
o.Chicago R2,U5,W14.66.00
o.Duquesne,Pa. U5 ..66.00
o.SanFrancisco B3 ..85.00

Alloy, Forging (NT)
Bethlehem,Pa. B2 ...$70.00
Buffalo R2 .....70.00
Canton,O. R2 .....70.00
Canton,O.(29) T7 ....66.00
Conshohocken,Pa. A3 ..77.00
Detroit R7 .....73.00
Fontana,Calif. K1 ....89.00
Gary,Ind. U5 .....70.00
Houston S5 .....78.00
Ind.Harbor,Ind. Y1 ...70.00
Johnstown,Pa. B2 .....70.00
Lackawanna,N.Y. B2 ..70.00
LosAngeles B3 .....90.00
Massillon,O. R2 .....70.00
Midland,Pa. C18 .....70.00
Munhall,Pa. U5 .....70.00
So.Chicago R2,U5,W14.70.00
So.Duquesne,Pa. U5 ..70.00
Struthers,O. Y1 .....70.00
Warren,O. C17 .....70.00

ROUNDS, SEAMLESS TUBE (NT)
Canton,O. R2 .....$82.00
Cleveland R2 .....82.00
Fontana,Calif. K1 ....103.00
Gary,Ind. U5 .....82.00
Massillon,O. R2 .....82.00
So.Chicago,Ill. R2 ....82.00
So.Duquesne,Pa. U5 ...82.00

SHEET BARS (NT)
Fontana,Calif. K1 ...$89.00

SKELP
Aliquippa,Pa. J5 .....$3.45
Munhall,Pa. U5 .....3.35
Warren,O. R2 .....3.35
Youngstown R2, U5 ...3.35

WIRE RODS
Alton,Ill. L1 .....4.40
AlabamaCity,Ala. R2 ..4.10
Buffalo W12 .....4.10
Cleveland A7 .....4.10
Donora,Pa. A7 .....4.10
Fairfield,Ala. T2 .....4.10
Fontana,Calif. K1 .....4.90
Houston S5 .....4.50
Johnstown,Pa. B2 .....4.10
Joliet,Ill. A7 .....4.10
LosAngeles B3 .....4.90
Minnequa,Colo. C10 ....4.35
Monessen,Pa. P7 .....4.30
No.Tonawanda,N.Y. B11.4.10
Pittsburg,Calif. C11 ....4.75
Portsmouth,O. P12 .....4.30
Roebling,N.J. R5 .....4.20
So.Chicago,Ill. R2 .....4.10
SparrowsPoint,Md. B2 ..4.20
Sterling,Ill.(1) N15 ....4.10
Struthers,O. Y1 .....4.10
Torrance,Calif. C11 ....4.90
Worcester,Mass. A7 ....4.40

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ....4.45
Lackawanna,N.Y. B2 ..4.45
Munhall,Pa. U5 .....4.45
So.Chicago,Ill. U5 .....4.45

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..3.60
Aliquippa,Pa. J5 .....3.65
Bessemer,Ala. T2 .....3.65
Bethlehem,Pa. B2 .....3.70
Clairton,Pa. U5 .....3.65
Fairfield,Ala. T2 .....3.65
Fontana,Calif. K1 .....4.25
Gary,Ind. U5 .....3.65
Geneva,Utah C11 .....3.65
Houston S5 .....4.05
Ind.Harbor,Ind. I-2 ....3.65
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 .....4.25
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 .....4.25
Minnequa,Colo. C10 ....4.10
Munhall,Pa. U5 .....3.65
Niles,Calif.(22) P1 .....4.85
Phoenixville,Pa. P4 ....5.90
Portland,Oreg. O4 .....4.50
Seattle B3 .....4.30
So.Chicago,Ill. U5, W14..3.65
So.SanFrancisco B3 ...4.20
Torrance,Calif. C11 ....4.25
Weirton,W.Va. W6 .....3.90

Alloy Stand. Shapes
Clairton,Pa. U5 .....4.35
Fontana,Calif. K1 .....5.55
Munhall,Pa. U5 .....4.35
So.Chicago,Ill. U5 .....4.35

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....5.50
Bessemer,Ala. T2 .....5.50
Bethlehem,Pa.(14) B2 ..5.50
Clairton,Pa. U5 .....5.50
Fairfield,Ala. T2 .....5.50
Fontana,Calif. K1 .....6.10
Gary,Ind. U5 .....5.50
Geneva,Utah C11 .....5.50
Ind.Harbor,Ind. I-2 ....5.50
Ind.Harbor,Ind. Y1 ....6.00
Johnstown,Pa. B2 .....5.50
Lackawanna,N.Y.(14)B2 5.50
LosAngeles B3 .....6.05
Munhall,Pa. U5 .....5.50
Seattle B3 .....6.10
So.Chicago,Ill. U5 .....5.50
So.SanFrancisco B3 ....6.00
Struthers,O. Y1 .....6.00

Wide Flange
Bethlehem,Pa. B2 .....3.70
Clairton,Pa. U5 .....3.65
Fontana,Calif. K1 .....4.65
Lackawanna,N.Y. B2 ..3.70
Munhall,Pa. U5 .....3.65
So.Chicago,Ill. U5 .....3.65

H.S., L.A. Wide Flange
Aliquippa,Pa. J5 .....5.50
Lackawanna,N.Y. B2 ..5.50
Munhall,Pa. U5 .....5.45
So.Chicago,Ill. U5 .....5.45

BEARING PILES
Munhall,Pa. U5 .....3.65
So.Chicago,Ill. U5 .....3.65

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.65
Bessemer,Ala. T2 .....5.65
Clairton,Pa. U5 .....5.65
Cleveland J5, R2 .....5.65
Conshohocken,Pa. A3 ..5.90
Fairfield,Ala. T2 .....5.65
Fontana,Calif.(30) K1 ..6.25
Gary,Ind. U5 .....5.65
Geneva,Utah C11 .....5.65
Ind.Harbor,Ind. I-2 ....5.65
Ind.Harbor,Ind. Y1 ....6.15
Johnstown,Pa. B2 .....5.65
Munhall,Pa. U5 .....5.65
Pittsburgh J5 .....5.65
Seattle B3 .....6.55
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5 .....5.65
SparrowsPoint,Md. B2 ..5.65
Warren,O. R2 .....5.65
Youngstown Y1 .....6.15

PLATES, Open-Hearth Alloy
Claymont,Del. C22 .....4.85
Coatesville,Pa. L7 .....5.25
Conshohocken,Pa. A3 ..5.05
Fontana,Calif. K1 .....5.70
Gary,Ind. U5 .....4.75
Johnstown,Pa. B2 .....4.75
Munhall,Pa. U5 .....4.75
Sharon,Pa. S3 .....5.20
So.Chicago,Ill. U5 .....4.75
SparrowsPoint,Md. B2 .4.75

FLOOR PLATES
Cleveland J5 .....4.75
Conshohocken,Pa. A3 ..4.75
Ind.Harbor,Ind. I-2 ....4.75
Munhall,Pa. U5 .....4.75
So.Chicago,Ill. U5 .....4.75

PLATES, Ingot Iron
Ashland,c.l. (15) A10 ..3.95
Ashland,c.l. (15) A10 ..4.45
Cleveland,c.l. R2 .....4.30
Warren,O.,c.l. R2 .....4.30

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 .....3.70
Ashland,Ky. (15) A10..3.70
Bessemer,Ala. T2 .....3.70
Clairton,Pa. U5 .....3.70
Claymont,Del. C22 .....4.15
Cleveland J5, R2 .....3.70
Coatesville,Pa. L7 .....4.15
Conshohocken,Pa. A3 ..4.15
Fairfield,Ala. T2 .....3.70
Fontana,Calif.(30) K1 ..4.30
Gary,Ind. U5 .....3.70
GraniteCity, Ill. G4 ....4.40
Geneva,Utah C11 .....3.70
Harrisburg,Pa. C5 ....6.30
Houston S5 .....4.10

PRICE REVISIONS

Listed quotations are those in effect prior to OPS' permission to raise prices retroactively to July 26. New price schedules are being prepared. Increases average about 4.7 per cent.

Ind.Harbor,Ind. I-2 Y1.3.70
Johnstown,Pa. B2 .....3.70
Lackawanna,N.Y. B2 ..3.70
Minnequa,Colo. C10 ....4.50
Munhall,Pa. U5 .....3.70
Pittsburgh J5 .....3.70
Seattle B3 .....4.60
Sharon,Pa. S3 .....3.95
So.Chicago,Ill. U5W14..3.70
SparrowsPoint,Md. B2 ..3.70
Steubenville,O. W10 ....3.70
Warren,O. R2 .....3.70
Weirton,W.Va. W6 ....4.00
Youngstown R2, U5, Y1.3.70

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ..3.70
Aliquippa,Pa. J5 .....3.70
Alton,Ill L1 .....4.15
Atlanta,Ga. A11 .....4.25
Bessemer,Ala. T2 .....3.70
Buffalo R2 .....3.70
Canton,O. R2 .....3.70
Clairton,Pa. U5 .....3.70
Cleveland R2 .....3.70
Detroit R7 .....3.85
Emeryville,Calif. J7 ....4.45
Fairfield,Ala. T2 .....3.70
Fontana,Calif. K1 .....4.40
Gary,Ind. U5 .....3.70
Houston S5 .....4.10
Ind.Harbor,Ind. I-2, Y1.3.70
Johnstown,Pa. B2 .....3.70
KansasCity, Mo. S5 ....4.30
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 .....4.40
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.15
Niles,Calif. P1 .....5.05
N.Tonawanda,N.Y. B11..3.70
Pittsburg,Calif. C11 ....4.40
Pittsburgh J5 .....3.70
Portland,Oreg. O4 .....4.65
Seattle B3, N14 .....4.45
So.Chicago R2, U5, W14.3.70
So.Duquesne,Pa. U5 ....3.70
So.SanFran.,Cal. B3 ...4.45
Struthers,O. Y1 .....3.70
Torrance,Calif. C11 ....4.40
Weirton,W.Va. W6 ....3.85
Youngstown R2, U5 ....3.70

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 .....4.30
Buffalo R2 .....4.30
Canton,O. R2 .....4.30
Canton,O.(29) T7 .....3.95
Clairton,Pa. U5 .....4.30
Detroit R7 .....4.45
Ecorse,Mich. G5 .....4.65
Fontana,Calif. K1 .....5.35
Gary,Ind. U5 .....4.30
Houston S5 .....4.70
Ind.Harbor,Ind. I-2, Y1.4.30
Johnstown,Pa. B2 ....4.30
KansasCity,Mo. S5 ....4.90
Lackawanna,N.Y. B2 ..4.30
LosAngeles B3 .....5.35
Massillon,O. R2 .....4.30
Midland,Pa. C18 .....4.30
So.Chicago R2, U5, W14.4.30
So.Duquesne,Pa. U5 ....4.30
Struthers,O. Y1 .....4.30
Warren,O. C17 .....4.30
Youngstown U5 .....4.30

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....4.55
Gary,Ind. U5 .....4.55
Youngstown U5 .....4.55

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.55
Bessemer,Ala. T2 .....5.55
Bethlehem,Pa. B2 .....5.55
Clairton,Pa. U5 .....5.55
Cleveland R2 .....5.55
Fairfield,Ala. T2 .....5.55
Fontana,Calif. K1 ....6.60
Gary,Ind. U5 .....5.55
Ind.Harbor,Ind. I-2 ....5.55
IndianaHarbor,Ind. Y1..6.05
Johnstown,Pa. B2 ....5.55
Lackawanna,N.Y. B2 ..5.55
LosAngeles B3 .....6.25
Pittsburgh J5 .....5.55
Seattle B3 .....6.30
So.Duquesne,Pa. U5 ....5.55
So.SanFrancisco B3 ....6.30
Struthers,O. Y1 .....6.05
Youngstown U5 .....5.55

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....4.55
BeaverFalls,Pa.M12,R2 ..4.55
Buffalo B5 .....4.60
Camden,N.J. P13 .....5.00
Carnegie,Pa. C12 .....4.55
Chicago W18 .....4.55
Cleveland A7, C20 .....4.55
Detroit P17 .....4.70
Donora,Pa. A7 .....4.55
Elyria,O. W8 .....4.55
FranklinPark,Ill. N5 ...4.55
Gary,Ind. R2 .....4.55
GreenBay,Wis. F7 ....4.55
Hammond,Ind. L2, M13.4.55
Hartford,Conn. R2 ....5.10
Harvey,Ill. B5 .....4.55
LosAngeles R2 .....6.00
Mansfield,Mass. B5 ....5.10
Massillon,O. R2, R8....4.55
Monaca,Pa. S17 .....4.55
Newark,N.J. W18 .....5.00
Plymouth,Mich. P5 ....4.80
Pittsburgh J5 .....4.55
Putnam,Conn. W18 ....5.10
Readville,Mass. C14 ....5.10
St.Louis,Mo. M5 .....4.95
So.Chicago,Ill. W14 ....4.55
SpringCity,Pa.(5) K3 ...5.00
Struthers,O. Y1 .....4.55
Waukegan,Ill. A7 .....4.55
Youngstown F3, Y1 ....4.55

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .....5.40
BeaverFalls,Pa. M12 ....5.40
Bethlehem,Pa. B2 .....5.40
Buffalo B5 .....5.40
Camden,N.J. P13 .....5.80
Canton,O. R2 .....5.40
Canton,O.(29) T7 .....4.90
Carnegie,Pa. C12 .....5.40
Chicago W18 .....5.40
Cleveland A7 .....5.45
Cleveland C20 .....5.40
Detroit P17 .....5.55
Donora,Pa. A7 .....5.45
Elyria,O. W8 .....5.40
Gary,Ind. R2 .....5.40
Hammond,Ind. L2, M13.5.40
Hartford,Conn. R2 ....5.85
Harvey,Ill. B5 .....5.40
Lackawanna,N.Y. B2 ..5.40
Mansfield,Mass. B5 ....5.85
Massillon,O. R2, R8 ....5.40
Midland,Pa. C18 .....5.40
Monaca,Pa. S17 .....5.40
Newark,N.J. W18 .....5.75
Plymouth,Mich. P5 ....5.60
So.Chicago,Ill. R2, W14.5.40
Struthers,O. Y1 .....5.40
Warren,O. C17 .....5.40
Waukegan,Ill. A7 .....5.45
Worcester,Mass. A7 ....5.75
Youngstown F3, Y1 ....5.40

RAIL STEEL BARS
ChicagoHts.(3,4) C2 ...4.75
ChicagoHts.(3,4) I-2 ...4.75
Franklin,Pa.(3,4) F5 ...4.75
FortWorth,Tex.(26) T4..4.85
Huntngt,W.Va.(3) W7..5.80
Marion,O.(3) P11 .....4.75
Moline,Ill.(3) R2 .....3.80
Tonawanda(3,4) B12 ...4.75
Williamsport(3) S19 ...5.00
Williamsport(4) S19 ...5.10

BARS, Wrought Iron
Dover,N.J.(Staybolt)U1 15.00
Dover(Eng.Bolt) U1 ...13.50
Dover(Wrght.Iron) U1 .12.25
Economy,Pa.(S.R.) B14.9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt) B14 12.20
McK.Rks.(Staybolt)L5 .14.50
McK.Rks.(S.R.) L5 ....9.60
McK.Rks.(D.R.) L5 ...13.00

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ..3.70
Atlanta A11 .....4.25
Buffalo R2 .....3.70
Cleveland R2 .....3.70
Emeryville,CaHf. J7 ....4.45
Fairfield,Ala. T2 .....3.70
Fontana,Calif. K1 .....4.40
Gary,Ind. U5 .....3.70
Houston S5 .....4.10
Ind.Harbor,Ind. I-2, Y1.3.70
Johnstown,Pa. B2 .....3.70
KansasCity,Mo. S5 ....4.30
Lackawanna,N.Y. B2 ..3.70
LosAngeles B3 .....4.40
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.50
Niles,Calif. P1 .....5.05
Pittsburg,Calif. C11 ....4.40
Pittsburgh J5 .....3.70
Portland,Oreg. O4 .....4.65
SandSprings,Okla S5 ..4.60
Seattle B3, N14 .....4.45
So.Chicago,Ill. R2 .....3.70
So.Duquesne,Pa. U5 ....3.70
So.SanFrancisco B3 ....4.45
SparrowsPoint,Md. B2..3.70
Struthers,O. Y1 .....3.70
Torrance,Calif. C11 ....4.40
Youngstown R2, U5 ....3.70

BARS, Reinforcing
(Fabricated; to Consumers)
Huntington,W.Va. W7 ..5.50
Johnstown, ¼-1" B2 ....4.75
LosAngeles B3 .....5.45
Marion,O. P11 .....5.00
Seattle B3, N14 .....5.55
So.SanFrancisco B3 ....5.45
SparrowsPt. ¼-1" B2 ..4.75
Williamsport,Pa. S19 ...5.10

SHEETS, Hot-Rolled Steel
(18 gage and heavier)
AlabamaCity,Ala. R2 ..3.60
Ashland,Ky.(8) A10 ....3.60
Butler,Pa. A10 .....3.60
Cleveland J5, R2 .....3.60
Conshohocken,Pa. A3 ..4.00
Detroit M1 .....4.40
Ecorse,Mich.(8) G5 ....3.80
Fairfield,Ala. T2 .....3.60
Fontana,Calif. K1 .....4.55
Gary,Ind. U5 .....3.60
Geneva,Utah C11 .....3.70
GraniteCity,Ill. G4 ....4.30
Ind.Harbor,Ind. I-2, Y1.3.60
Irvin,Pa. U5 .....3.60
Lackawanna,N.Y. B2 ..3.60
Munhall,Pa. U5 .....3.60
Niles,O. N12 .....5.25
Pittsburg,Calif. C11 ....4.30
Pittsburgh J5 .....3.60
Sharon,Pa. S3 .....4.00
So.Chicago,Ill. W14 ....3.60
SparrowsPoint,Md. B2 ..3.60
Steubenville,O. W10 ....3.60
Torrance,Calif. C11 ....4.30
Warren,O. R2 .....3.60
Weirton,W.Va. W6 ....3.60
WestLeechburg,Pa.A4 ..3.75
Youngstown U5, Y1 ....3.60

SHEETS, H.R. (19 gage)
AlabamaCity,Ala R2 ..4.75
Dover,O. R1 .....5.65
Ind.Harbor,Ind. I-2 ....5.40
Mansfield,O. E6 .....5.65
Niles,O. N12 .....5.75
Torrance,Calif. C11 ....5.40

SHEETS, H.R. (14 ga., heavier)
High-Strength Low-Alloy
Cleveland J5, R2 .....5.40
Conshohocken,Pa. A3 ..5.65
Ecorse,Mich G5 .....5.95
Fairfield,Ala. T2 .....5.40
Fontana,Calif. K1 .....6.35
Gary,Ind. U5 .....5.40
Ind.Harbor,Ind I-2 ....5.40
Ind.Harbor,Ind. Y1 ....5.90
Irvin,Pa. U5 .....5.40
Lackawanna(35) B2 ...5.40
Pittsburgh J5 .....5.40
Sharon,Pa. S3 .....5.40
So.Chicago,Ill U5 .....5.40
SparrowsPoint(36) B2 ..5.40
Warren, O. R2 .....5.40
Weirton,W.Va. W6 ....5.75
Youngstown U5 .....5.40
Youngstown Y1 ..... 5.90

SHEETS, Cold-Rolled
High-Strength Low-Alloy
Cleveland J5, R2 .....6.65
Ecorse,Mich. G5 .....7.10
Fontana,Calif. K1 ....7.50
Gary,Ind. U5 .....6.65
IndianaHarbor,Ind. Y1 ..7.05
IndianaHarbor,Ind. I-2..6.55
Irvin,Pa. U5 .....6.55
Lackawanna(37) B2 ...6.55
Pittsbugh J5 .....6.55
SparrowsPoint(38) B2 ..6.55
Warren,O. R2 .....6.55
Weirton,W.Va. W6 ....6.90
Youngstown Y1 .....7.05

SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10	4.35
Cleveland J5, R2	4.35
Ecorse,Mich. G5	4.55
Fairfield,Ala. T2	4.35
Follansbee,W.Va. F4	5.35
Fontana,Calif. K1	5.30
Gary,Ind. U5	4.35
GraniteCity,Ill. G4	5.05
Ind.Harbor,Ind. I-2, Y1	4.35
Irvin,Pa. U5	4.35
Lackawanna,N.Y. B2	4.35
Middletown,O. A10	4.35
Pittsburg,Calif. C11	5.30
Pittsburgh J5	4.35
SparrowsPoint,Md. B2	4.35
Steubenville,O. W10	4.35
Warren,O. R2	4.35
Weirton,W.Va. W6	4.35
Youngstown Y1	4.35

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2	4.80
Ashland,Ky.(8) A10	4.80
Canton,O. R2	4.80
Dover,O. R1	5.50
Fairfield,Ala. T2	4.80
Gary,Ind. U5	4.80
GraniteCity,Ill., G4	5.50
Ind.Harbor,Ind. I-2	4.80
Irvin,Pa. U5	4.80
Kokomo,Ind.(13) C16	5.20
MartinsFerry,O. W10	4.80
Niles,O. N12	6.00
Pittsburg,Calif. C11	5.55
SparrowsPoint,Md. B2	4.80
Steubenville,O. W10	4.80
Torrance,Calif. C11	5.55
Weirton,W.Va. W6	4.80

SHEETS, Galvanized No. 10, High-Strength Low-Alloy

Irvin,Pa. U5	7.20
SparrowsPoint(39) B2.	6.75

SHEETS, Galvannealed Steel

Canton,O. R2	5.35
Irvin,Pa. U5	5.35
Kokomo,Ind.(13) C16	5.75
Niles,O. N12	6.55

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10	5.05
Middletown,O. A10	5.05

SHEETS, Electro Galvanized

Cleveland R2 (28)	5.65
Niles,O. R2 (28)	5.65
Weirton,W.Va. W6	5.50

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2	5.70

SHEETS, Drum Body

Pittsburg,Calif. C11	4.30
Torrance,Calf. C11	4.30

SHEETS, Well Casing

Fontana,Calif. K1	5.10

BLUED Stock, 29 ga.

Yorkville,O. W10	6.80
Follansbee,W.Va.(23)F4	6.85

SHEETS, Enameling Iron

Ashland,Ky.(8) A10	4.65
Cleveland R2	4.65
Gary,Ind. U5	4.65
GraniteCity,Ill. G4	5.35
Ind.Harbor,Ind. I-2	4.65
Irvin,Pa. U5	4.65
Middletown,O. A10	4.65
Youngstown Y1	4.65

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.25
Fairfield,Ala. T2	6.35
Gary,Ind. U5	6.25
GraniteCity,Ill. G4	6.45
Ind.Harbor,Ind. I-2, Y1	6.25
Irvin,Pa. U5	6.25
Niles,O. R2	6.25
Pittsburg,Calif. C11	7.00
SparrowsPoint,Md. B2	6.35
Warren,O. R2	6.25
Weirton,W.Va. W6	6.25
Yorkville,O. W10	6.25

HOLLOWARE ENAMELING Black Plate (29 gage)

Follansbee,W.Va. F4	5.85
Gary,Ind. U5	5.85
GraniteCity,Ill. G4	6.05
Ind.Harbor,Ind. Y1	5.85
Irvin,Pa. U5	5.85
Yorkville,O. W10	6.15

SHEETS, Culvert No. 16	Cu Alloy	Cu Fe
Ashland,Ky. A10	5.60	...
Canton,O. R2	5.65	6.10
Fairfield,Ala. T2.	5.60	5.85
Gary,Ind. U5	5.60	5.85
IndianaHarbor I-2	5.60	5.85
Irvin,Pa. U5	5.60	5.85
Kokomo,Ind. C16.	6.25	...
MartinsFy.O. W10	5.60	5.85
Pittsburg,Cal. C11	6.35	...
SparrowsPt. B2.	5.60	...
Torrance,Cal. C11	6.35	...

SHEETS, Culvert, No. 16 Pure Iron

Ashland,Ky. A10	5.85
Fairfield,Ala. T2	5.85

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland,Ky.(8) A10	3.85
Cleveland R2	4.20
Ind.Harbor,Ind. I-2	3.85
Warren,O. R2	4.20

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2	4.95
Middletown,O. A10	4.85
Warren,O. R2	4.95

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10	5.05
Canton,O. R2	5.55

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10	5.30
Middletown,O. A10	5.30

SHEETS, ALUMINIZED

Butler,Pa. A10	8.15

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.15	$7.40	$7.80
Fairfield,Ala. T2	7.25	7.50	7.90
Gary,Ind. U5	7.15	7.40	7.80
GraniteCity,Ill. G4	7.35	7.60	8.00
IndianaHarbor,Ind. I-2, Y-1	7.15	7.40	7.80
Irvin,Pa. U5	7.15	7.40	7.80
Niles,O. R2	7.15	7.40	7.80
Pittsburg,Calif. C11	7.90	8.15	8.55
SparrowsPoint,Md. B2	7.25	7.50	7.90
Weirton,W.Va. W6	7.15	7.40	7.80
Yorkville,O. W10	7.15	7.40	7.80

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (Cut lengths ½c lower)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom W10 (cut lengths)	...	...	7.25	8.50	9.30
Brackenridge,Pa. A4	...	...	7.75	9.00	9.80
GraniteCity,Ill. G4 (cut lengths)	...	...	7.95	9.20	...
IndianaHarbor,Ind. I-2	6.95	7.25	(34)	..	...
Mansfield,O. E6 (cut lengths)	7.10	7.25	7.75	9.00	9.80
Niles,O. N12 (cut lengths)	...	6.75	7.25	...	...
Vandergrift,Pa. U5	...	7.25	7.75	9.00	9.80
Warren,O. R2	6.95	7.25	7.75	9.00	9.80
Zanesville,O. A10	...	7.25	7.75	9.00	9.80

SHEETS, SILICON (22 Ga. Base) Coils (Cut Lengths ½c lower)

Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	9.85	10.40	11.10	11.90
Brackenridge,Pa. A4	10.35	....	....	....
Vandergrift,Pa. U5	10.35	10.90	11.60	12.40
Warren,O. R2	10.35	....	....	....
Zanesville,O. A10	10.35	10.90	11.60	12.40

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	14.75	15.25
Vandergrift,Pa. U5	12.90	13.75	14.75	15.25

TINPLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.45	$8.70
Fairfield,Ala. T2	8.55	8.80
Gary,Ind. U5	8.45	8.70
Ind.Har. I-2, Y1.	8.45	8.70
Irvin,Pa. U5	8.45	8.70
Pitts.,Cal. C11	9.20	9.45
Sp.Pt.,Md. B2	8.55	8.80
Warren,O. R2	8.45	8.70
Weirton,W.Va.W6	8.45	8.70
Yorkville,O. W10.	8.45	8.70

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$7.60
Gary,Ind. U5	7.50
Irvin,Pa. U5	7.50
SparrowsPoint,Md. B2	7.60
Yorkville,O. W10	7.50

SHEETS, LT. Coated Ternes, 6 lb

Yorkville,O. W10	$8.40

SHEET, Mfg. Ternes, 8 lb (Commercial Quality)

Gary,Ind. U5	$9.50
Yorkville,O. W10	9.50

SHEET, Long Terne Steel (Commercial Quality)

BeechBottom,W.Va.W10	5.20
Gary,Ind. U5	5.20
Mansfield,O. E6	6.05
Middletown,O. A10	5.20
Niles,O. N12	6.00
Weirton,W.Va. W6	5.20

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10	5.00

ROOFING SHORT TERNES (8 ib Coated)

Gary,Ind. U5	9.50

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2	5.30
Conshohocken,Pa. A3	5.55
Ecorse,Mich. G5	5.95
Fairfield,Ala. T2	5.30
Fontana,Calif. K1	6.20
Gary,Ind. U5	5.30
Ind.Harb.,Ind. I-2	5.30
IndianaHarbor,Ind. Y1	5.80
Lackawanna,N.Y. B2	4.95
LosAngeles(25) B3	6.05
Seattle B3	6.30
Sharon,Pa. S3	5.40
So.SanFrancisco(25) B3	6.05
SparrowsPoint,Md. B2.	4.95
Warren,O. R2	5.30
Weirton,W.Va. W6	5.75
Youngstown Y1	5.80
Youngstown U5	5.30

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland J5	6.70
Cleveland A7	6.55
Dover,O. G6	7.30
Fontana,Calif. K1	6.95
Lackawanna,N.Y. B2	6.40
Sharon,Pa. S3	6.55
SparrowsPoint,Md. B2	6.40
Warren,O. R2	6.55
Weirton,W.Va. W6	7.20
Youngstown Y1	7.05

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	3.50
Alton,Ill. L1	3.95
Ashland,Ky.(8) A10	3.50
Atlanta A11	4.05
Bessemer,Ala. T2	3.50
Bridgeprt,Conn.(10) S15	4.00
Buffalo(27) R2	3.50
Butler,Pa. A10	3.50
Carnegie,Pa. S18	4.00
Conshohocken,Pa. A3	3.90
Detroit M1	4.40
Ecorse,Mich. G5	3.80
Fairfield,Ala. T2	3.50
Fontana,Calif. K1	4.75
Gary,Ind. U5	3.50
Houston,Tex. S5	4.90
Ind.Harbor,Ind. I-2, Y1.	3.50
Johnstown,Pa.(25) B2	3.50
KansasCity,Mo.(9) S5	4.10
Lackawanna,N.Y.(32)B2	3.50
LosAngeles B3	4.25
Milton,Pa. B6	4.35
Minnequa,Colo. C10	4.55
NewBritain(10) S15	4.00
No.Tonawanda,N.Y.B11	3.50
Pittsburg,Calif. C11	4.25
Riverdale,Ill. A1	3.50
SanFrancisco S7	4.85
Seattle B3, N14	4.50
Sharon,Pa. S3	4.00
So.Chicago,Ill, W14	3.50
So.SanFrancisco B3	4.25
SparrowsPoint,Md. B2	3.50
Torrance,Calif. C11	4.25
Warren,O. R2	3.50
Weirton,W.Va. W6	3.60
WestLeechburg,Pa. A4	3.75
Youngstown U5, Y1	3.50

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15	5.45
Carnegie,Pa. S18	5.85
Fontana,Calif. K1	6.70
Gary,Ind. U5	5.50
Houston,Tex. S5	5.90
KansasCity,Mo. S5	6.10

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.1...
Berea,O. C7	...	6.80	7.40	9.35	11...
Bridgeport,Conn.(10) S15	5.35	6.80	7.40	9.35	11...
Bristol,Conn. W1	...	...	7.70	9.65	...
Carnegie,Pa. S18	...	6.80	7.40	9.35	11...
Cleveland A7	4.65	6.45	7.40	9.35	11...
Dearborn,Mich. D3	5.60	7.05	7.65	...	...
Detroit D2	5.60	6.65	7.25	...	...
Dover,O. G6	5.50	6.80	7.40	9.35	11...
FranklinPark,Ill. T6	5.00	6.60	7.55	9.50	11...
Harrison, N. J. C18	...	...	7.70	9.65	11...
Mattapan,Mass. T6	5.50	6.75	7.70	9.65	11...
NewBritn.,Conn.(10) S15	5.35	6.80	7.40	9.35	11...
NewCastle,Pa. B4	5.35	6.80	7.40	9.35	...
NewCastle,Pa. E5	5.50	6.80	7.40	9.35	11...
NewHaven,Conn., D2	5.85	6.75	7.35	...	...
NewYork W3	...	7.10	7.70	9.65	11...
Pawtucket,R.I, N8: Cleve.orPitts.Base	...	6.80	7.40	9.35	11...
Worcester,Mass.,Base	5.85	7.10	7.70	9.65	11...
Sharon,Pa. S3	5.35	6.80	7.40	9.35	11...
Trenton,N.J. R5	...	7.10	7.70	9.65	11...
Wallingford,Conn. W2	5.85	6.75	7.35	9.30	11...
Weirton,W.Va. W6	5.35	6.80	7.40	9.35	11...
Worcester,Mass. A7	4.95	6.75	7.70	9.65	11...
Worcster,Mass. T6	5.50	6.75	7.70	9.65	11...
Youngstown C8	...	6.80	7.40	9.35	11...

Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	10.30	12.50	15...
Harrison,N.J. C18	...	...	10.30	12.50	15...
NewYork W3	...	...	10.30	12.50	15...

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6	5...
Berea,O. C7	6...
Bridgeprt.Conn.(10) S15	5...
Butler,Pa. A10	4...
Cleveland A7, J5	4...
Dearborn,Mich. D3	5...
Detroit D2	5...
Detroit M1	5...
Dover,O.(40) G6	5...
Ecorse,Mich. G5	4...
Follansbee,W.Va. F4	4...
Fontana,Calif. K1	5...
FranklinPark,Ill.(40)T6	4...
Ind.Harbor,Ind., I-2	4...
Lackawanna,N.Y. B2	4...
Los Angeles C1	6...
Mattapan,Mass. T6	5...
Middletown,O. A10	4...
NewBritain(10) S15	5...
NewCastle,Pa. B4	5...
NewCastle,Pa.(40) E5	5...
NewHaven,Conn. D2	5...
NewHaven,Conn. A7	5...
Pawtucket,R.I. R3	6...
Pawtucket,R.I.(21) N8.	5...
Riverdale,Ill.(40) A1	4...
Rome,N.Y. R6	5...
Sharon,Pa. S3	5...
SparrowsPoint,Md. B2	4...
Trenton,N.J. R5	6...
Wallingford,Conn. W2	5...
Warren,O.(40) T5	5...
Warren,O. R2	4...
Weirton,W.Va. W6	4...
Youngstown C8 (40)	5...
Youngstown Y1	4...
Midland,Pa. C18	5...
NewBritn,Conn.(10) S15.	5...
Sharon,Pa. S3	5...
Youngstown U5	5...

STRIP, Electro Galvanized

Dover,O. G6	5...
Warren,O. T5	5...
Weirton,W.Va. W6	4...
Youngstown C8	5...

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Co.
B14 A. M. Byers Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Corp.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire

G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Co.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div. Borg-Warner Corp.
I-7 Indiana Steel & Wire

J1 Jackson Iron & Steel
J3 Jessop Steel Co.
J4 Johnson Steel & Wire
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro Met.
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10)	S15 10.75
Carnegie,Pa.	S18 ....10.60
Cleveland A7	.....10.00
Dover,O. G6	.....10.50
Fontana,Calif. K1	.....11.65
Harrison,N.J. C1S	....10.60
Midland,Pa. C1S	.....10.60
NewBritn.Conn.(10)	S15 10.75
Pawtucket,R.I.(11)	NS.10.75
Pawtucket,R.I.(12)	NS.11.05
Sharon,Pa. S3	.....10.60
Worcester,Mass. A7	...10.30
Youngstown CS	.....10.60

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	....3.75
Warren,O. R2	.....4.10

STRIP, Cold-Rolled Ingot Iron

Warren,O.R2	.....5.25

TIGHT COOPERAGE HOOP

Atlanta A11	.....4.05
Riverdale,Ill. A1	.....3.90
Sharon,Pa. S3	.....4.15
Youngstown U5	.....3.75

WIRE, Tire Bead

Bartonville,Ill.(1) K4	..10.90
Monessen,Pa. P16	....11.40
Roebling,N.J. R5	.....11.55

WIRE, Merchant Quality

(6 to 8 gage)	An'ld.	Galv.
AlabamaCity R2	5.70	5.95
Aliquippa J5	5.70	6.15
Atlanta A11	5.95	6.40
Bartonville(19)K4	5.70	6.15
Buffalo W12	4.85	...
Cleveland A7	5.70	6.15
Crawfordsville MS	5.95	6.40
Donora,Pa. A7	5.70	6.15
Duluth,Minn. A7	5.70	6.15
Fairfield T2	5.70	6.15
Houston,Tex. S5	6.10	6.55
Johnstown B2	5.70	6.15
Joliet,Ill. A7	5.70	6.15
KansasCy.Mo. S5	6.30	6.75
Kokomo C16	5.80	6.05
LosAngeles B3	6.65	...
Minnequa C10	5.95	6.45
Monessen P7	5.95	6.40
Palmer W12	5.15	...
Pitts.,Calif. C11	6.65	6.80
Prtsmth.(18)P12	6.10	6.60
Rankin A7	5.70	6.15
So.Chicago R2	5.70	5.95
So.S.Fran. C10	6.65	7.10
SparrowsPt. B2	5.80	6.25
Sterling,Ill.(1)N15	5.70	6.15
Struthers,O. Y1	5.70	6.15
Torrance,Cal. C11	6.65	...
Worcester A7	6.00	6.45

ROPE WIRE

	(A)	(B)
Alton,Ill. L1	8.65	8.90
Bartonville,Ill. K4	8.55	8.80
Buffalo W12	8.55	8.80
Fostoria,O. S1	8.85	9.10
Johnstown,Pa. B2	8.55	8.80
Monessen,Pa. P16	8.55	8.80
Monessen,Pa. P7	8.80	9.05
Muncie,Ind. I-7	8.75	9.00
Palmer,Mass. W12	8.85	9.10
Portsmouth,O. P12	8.55	8.80
Roebling,N.J. R5	8.85	9.10
SparrowsPt. B2	8.65	8.90
Struthers,O. Y1	8.55	8.80
Worcester J4, T6	8.85	9.10

(A) Plow and Mild Plow.
(B) Improved Plow.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	..4.85
Aliquippa,Pa. J5	.....4.85
Atlanta A11	.....5.10
Alton,Ill. L1	.....5.05
Bartonville,Ill.(1) K4	..4.85
Buffalo W12	.....4.85
Chicago W13	.....5.10
Cleveland A7, C20	....4.85
Crawfordsville,Ind. MS	..5.10
Donora,Pa. A7	.....4.85
Duluth,Minn. A7	.....4.85
Fairfield,Ala. T2	....4.85
Fostoria,O.(24) S1	....5.35
Houston S5	.....5.25
Johnstown,Pa. B2	.....4.85
Joliet,Ill. A7	.....4.85
KansasCity,Mo. S5	....5.45
Kokomo,Ind. C16	.....4.95
LosAngeles B3	.....5.80
Minnequa,Colo. C10	....5.10
Monessen,Pa. P7	.....5.10
Newark 6-8 ga. I-1	....5.50
No.Tonawanda B11	....4.85
Palmer,Mass. W12	.....5.15
Pittsburg,Calif. C11	....5.80
Portsmouth,O. P12	.....5.25
Rankin,Pa. A7	.....4.85
So.Chicago,Ill. R2	.....4.85
So.SanFrancisco C10	...5.80
SparrowsPoint,Md. B2	..4.95
Sterling,Ill.(1) N15	.....4.85
Struthers,O. Y1	.....4.85
Torrance,Calif. C11	....5.80
Waukegan,Ill. A7	.....4.85
Worcester,Mass. A7, T6	.5.15

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	.....6.20
Buffalo W12	.....6.35
Cleveland A7	.....5.85
Crawfordsville,Ind. M8	..6.20
Detroit D2	.....6.20
Dover,O. G6	.....6.20
Fostoria,O. S1	.....6.00
Kokomo,Ind. C16	.....5.70
FranklinPark,Ill. T6	...6.20
Massillon,O. R8	.....5.85
Monessen,Pa. P16	.....5.85
Monessen,Pa. P7	.....6.10
NewHaven,Conn. D2	...6.50
Pawtucket,R.I.(12) N8	..6.85
Trenton,N.J. R5	.....6.15
Worcester,Mass. A7	....6.15
Worcester,Mass. T6	....6.50
Worcester,Mass. W12	...6.65

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	.....8.50
Monessen,Pa. P16	.....8.50
Muncie,Ind. I-7	.....8.70
Roebling,N.J. R5	.....8.80
SparrowsPoint,Md. B2	..8.60
Johnstown,Pa. B2	.....8.50

WIRE (16 gauge)	Anl'd. Stone	Galv. Stone
Aliquippa J5	....10.15	12.15
Bartonville(1)K4	.10.25	11.95
Cleveland A7	....10.25	12.15
Crawfordsville M8	.10.30	12.00
Fostoria,O. S1	..10.40	13.00
Johnstown B2	...10.25	11.95
Kokomo C16	....10.25	11.95
Minnequa C10	....10.40	12.40
Palmer,Mass. W12	.10.25	12.15
Pitts.Cal. C11	..10.60	12.50
Prtsmth.(18)P12	10.55	12.30
SparrowsPt. B2	..10.35	12.25
Waukegan A7	...10.25	12.15

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	.....6.25
Alton,Ill. L1	.....6.45
Bartonville,Ill.(1) K4	...6.25
Buffalo W12	.....6.25
Cleveland A7	.....6.25
Donora,Pa. A7	.....6.25
Duluth,Minn. A7	.....6.25
Fostoria,O. S1	.....6.25
Johnstown,Pa. B2	.....6.25
LosAngeles B3	.....7.20
Milbury,Mass.(12) N6	.8.05
Monessen,Pa. P7, P16	..6.25
Muncie,Ind. I-7	.....6.45
Palmer,Mass. W12	.....6.55
Pittsburg,Calif. C11	....7.20
Roebling,N.J. R5	.....6.55
Portsmouth,O. P12	.....6.25
So Chicago,Ill. R2	.....6.25
So.SanFrancisco C10	...7.20
SparrowsPoint,Md. B2	..6.35
Struthers,O. Y1	.....6.25
Trenton,N.J. A7	.....6.55
Waukegan,Ill. A7	.....6.25
Worcester A7, T6, W12	..6.55
Worcester,Mass. J4	....6.75

WIRE, Fine & Weaving (8"Coils)

Bartonville,Ill.(1) K4	..8.90
Buffalo W12	.....8.90
Chicago W13	.....8.90
Cleveland A7	.....8.90
Crawfordsville,Ind. M8	..8.95
Fostoria,O. S1	.....8.90
Johnstown,Pa. B2	.....8.90
Kokomo,Ind. C16	.....8.90
Monessen,Pa. P16	.....8.90
Muncie,Ind. I-7	.....9.10
Palmer,Mass. W12	.....9.20
Portsmouth,O. P12	.....8.90
Roebling,N.J. R5	.....9.20
Waukegan,Ill. A7	.....8.90
Worcester,Mass. A7, T6	.9.20

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	...137
Aliquippa,Pa. J5	141
Atlanta A11	144
Bartonville,Ill.(19) K4	...144
Crawfordsville,Ind. M8	..146
Donora,Pa. A7	141
Duluth,Minn. A7	141
Fairfield,Ala. T2	141
Houston,Tex. S5	149
Johnstown,Pa. B2	141
Joliet,Ill. A7	141
KansasCity,Mo. S5	153
Kokomo,Ind. C16	143
Minnequa,Colo. C10	147
Monessen,Pa. P7	146
Pittsburg,Calif. C11	161
Portsmouth,O.(18) P12	..148
Rankin,Pa. A7	141
So.Chicago,Ill. R2	137
So.SanFran.,Calif. C10	..161
SparrowsPoint,Md. B2	..143
Sterling,Ill. (1) N15	141

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	...123
Atlanta A11	126
Bartonville,Ill.(19) K4	..123
Crawfordsville,Ind. M8	..132
Donora,Pa. A7	123
Duluth,Minn. A7	123
Fairfield,Ala. T2	123
Joliet,Ill. A7	123
KansasCity,Mo. S5	135
Kokomo,Ind. C16	125
Minnequa,Colo. C10	128
Pittsburg,Calif. C11	147
So.Chicago,Ill. R2	123
So.SanFran.,Calif. C10	..147
SparrowsPoint,Md. B2	..125
Sterling,Ill.(1) N15	123

WIRE, Upholstery Spring

Aliquippa,Pa. J5	.....5.90
Alton,Ill. L1	.....6.10
Buffalo W12	.....5.90
Cleveland A7	.....5.90
Donora,Pa. A7	.....5.90
Duluth,Minn. A7	.....5.90
Johnstown,Pa. B2	.....5.90
LosAngeles B3	.....6.85
Monessen,Pa. P7, P16	..5.90
NewHaven,Conn. A7	...6.20
Palmer,Mass. W12	.....6.20
Pittsburg,Calif. C11	....6.85
Portsmouth,O. P12	.....5.90
Roebling,N.J. R5	.....6.20
So.Chicago,Ill. R2	.....5.90
So.SanFrancisco C10	...6.85
SparrowsPoint,Md. B2	..6.00
Torrance,Calif. C11	....6.85
Trenton,N.J. A7	.....6.20
Waukegan,Ill. A7	.....5.90
Worcester,Mass. A7	....6.20

WOVEN FENCE, 9-15½ Ga. Col.

AlabamaCity,Ala. R2	...127
Ala.City,Ala.,17-18ga. R2	214
Aliquippa,Pa.9-14½ga.J5	131
Atlanta A11	134
Bartonville,Ill.(19) K4	..131
Crawfordsville,Ind. M8	..133
Donora,Pa. A7	131
Duluth,Minn. A7	131
Fairfield,Ala. T2	131
Houston,Tex. S5	139
Johnstown,Pa. B2	131
Johnstown,17ga.,6" B2	..205
Johnstown,17ga.,4" B2	..208
Joliet,Ill. A7	131
KansasCity,Mo. S5	143
Kokomo,Ind. C16	133
Minnequa,Colo. C10	139
Monessen,Pa. P7	136
Pittsburg,Calif. C11	154
Portsmouth,O.(18) P12	..138
Rankin,Pa. A7	131
So.Chicago,Ill. R2	127
Sterling,Ill.(1) N15	131

FENCE POSTS

ChicagoHts.,Ill. C2	140
Duluth,Minn. A7	125
Franklin,Pa. F5	140
Huntington,W.Va. W7	...140
Johnstown,Pa. B2	140
Marion,O. P11	140
Minnequa,Colo. C10	130
Moline,Ill. R2	136
So.Chicago,Ill R2	140
Tonawanda,N.Y. B12	...140
Williamsport,Pa. S19	...150

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	.....9.85
Lebanon,Pa.(31) B2	....9.85
Minnequa,Colo. C10	....9.85
Pittsburgh O3, P14	....9.85
Seattle B3	.....10.35

NAILS & STAPLES, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	...118
Aliquippa,Pa.(13) J5	118
Atlanta A11	121
Bartonville,Ill.(19) K4	..118
Chicago,Ill. W13	118
Cleveland A9	125
Crawfordsville,Ind. M8	..122
Donora,Pa. A7	118
Duluth,Minn. A7	118
Fairfield,Ala. T2	118
Galveston,Tex. D7	126
Houston,Tex. S5	126
Johnstown,Pa. B2	118
Joliet,Ill. A7	118
KansasCity,Mo. S5	130
Kokomo,Ind. C16	120
Minnequa,Colo. C10	123
Monessen,Pa. P7	124
Pittsburg,Calif. C11	137
Portsmouth,O. P12	124
Rankin,Pa. A7	118
So.Chicago,Ill. R2	118
SparrowsPoint,Md. B2	..120
Sterling,Ill.(1) N15	118
Torrance,Calif. C11	138
Worcester,Mass. A7	124

NAILS, Cut (100 lb keg)

To dealers (33)	
Conshohocken,Pa. A3	..$7.35
Wheeling,W.Va. W10	...7.35

TIE PLATES

Fairfield,Ala. T2	.....4.50
Gary,Ind. U5	.....4.50
Ind.Harbor,Ind. I-2	....4.50
Lackawanna,N.Y. B2	..4.50
Minnequa,Colo. C10	....4.50
Pittsburg,Calif. C11	....4.65
Seattle B3	.....4.65
Steelton,Pa. B2	.....4.50
Torrance,Calif. C11	....4.65

JOINT BARS

Bessemer,Pa. U5	.....4.70
Fairfield,Ala. T2	.....4.70
Ind.Harbor,Ind. I-2	....4.70
Joliet,Ill. U5	.....4.70
Lackawanna,N.Y. B2	..4.70
Minnequa,Colo. C10	....4.70
Steelton,Pa. B2	.....4.70

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	..6.15
KansasCity,Mo. S5	.....6.40
Lebanon,Pa. B2	.....6.15
Minnequa,Colo. C10	....6.15
Pittsburgh J5	.....6.15
Seattle B3	.....6.65
So.Chicago,Ill. R2	.....6.15
Struthers,O. Y1	.....6.15
Youngstown R2	.....6.15

AXLES

Ind.Harbor,Ind. S13	....5.60
Johnstown,Pa. B2	.....5.60

RAILS	Std. No. 1	Std. No. 2	Std. All No. 2	Tee Rails 60 lb Under
Bessemer,Pa. U5	3.60	3.50	3.55	4.00
Ensley,Ala. T2	3.60	3.50	...	4.00
Fairfield,Ala. T2	...	...	...	4.00
Gary,Ind. U5	3.60	3.50	3.55	...
Huntington,W.Va. W7	...	...	...	5.00
IndianaHarbor,Ind. I-2	3.60	3.50	3.55	...
Johnstown,Pa. B2	...	...	...(16)	4.00
Lackawanna,N.Y. B2	3.60	3.50	...	4.00
Minnequa,Colo. C10	3.60	3.50	...	4.50
Steelton,Pa. B2	3.60	3.50	...	...
Williamsport,Pa. S19	...	...	...	4.75

TOOL STEEL

Grade	$ per lb
Regular Carbon	0.230
Extra Carbon	0.270
Special Carbon	0.325
Oil Hardening	0.350
5% Cr Hot Work	0.350
Hi-Carbon-Cr	0.635

Grade by Analysis

W	Cr	V	Co	
18	4	1	....	1.505
18	4	2	....	1.650
20.25	4.25	1.6	12.25	3.535-3.675
19	4	2	7	2.460
18.25	4.25	1	4.75	2.125
18	4	2	9	2.445-2.45
13.5	4	3	....	1.6025

W	Cr	V	Mo	
6.4	4.5	19.5	5	0.96-0.965
6	4	3	6	1.190
1.5	4	1	8.5	0.810

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

Footnotes:
(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) Philadelphia del.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.50c for 17 Ga. & heavier.
(14) Also wide flange beams.
(15) ⅛" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 28 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing, mill lengths, to fabricators; to consumers, 5.60c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Subject to 10% increase.
(30) Sheared: add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c.
(34) 7.25c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter: 60" & narrower.
(38) 14 gage & lighter: 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.

Key to Producers

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.

N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng-HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Div.
N14 Nrthwst. Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S24 Seidelhuber Steel

T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.

U1 Ulster Iron Works
U4 Universal Cyclops Steel
U5 United States Steel Co.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.

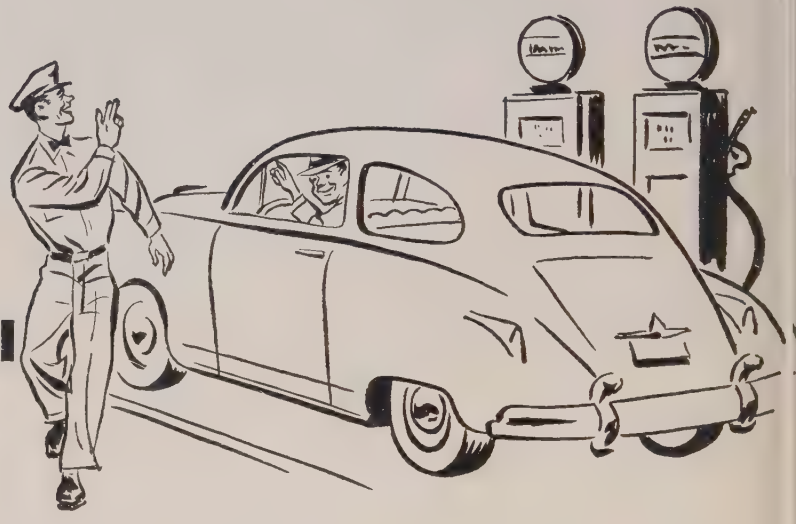
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div. International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet&Tube

"SEE YOU AT THE POLLS!"

"SEE YOU AT THE POLLS!"

"SEE YOU AT THE POLLS!"



Nobody knows for sure how it started—this line about "See you at the Polls!" we're hearing all over these days.

Best explanation seems to be that it came from that state candidate out west. . . . His opponent in a debate got all riled up and challenged him to fight it out in the alley.

But he said—"I'll settle this the AMERICAN way—I'll see you at the polls!" And the audience picked up the chant.

Now everybody's saying it—and on Nov. 4 everybody will be *doing* it!

"SEE YOU AT THE POLLS!"

"SEE YOU AT THE POLLS!"

THE AMERICAN HERITAGE FOUNDATION
A PUBLIC SERVICE PROJECT OF THE ADVERTISING COUNCIL
TENTH ANNIVERSARY

STANDARD PIPE, T & C

BUTTWELD

Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅛	5.5c	0.24	34.0	32.0	...	+0.5	+2.5	...
¼	6.0	0.42	28.5	26.5	...	+3.5	+5.5	...
⅜	6.0	0.57	23.5	21.5	...	+10.0	+12.0	...
½	8.5	0.85	36.0	34.0	35.0	12.0	10.0	11.0
¾	11.5	1.18	39.0	37.0	38.0	16.0	14.0	15.0
1	17.0	1.68	41.5	39.5	40.5	19.5	17.5	18.5
1¼	23.0	2.28	42.0	40.0	41.0	20.5	18.5	19.5
1½	27.5	2.78	42.5	40.5	41.5	21.5	19.5	20.5
2	37	3.68	43.0	41.0	42.0	22.0	20.0	21.0
2½	58.5	5.82	43.5	41.5	42.5	23.0	21.0	22.0
3	76.5	7.62	43.5	41.5	42.5	23.0	21.0	22.0

Column A: Etna, Pa N2 and 36½% on 3½", 4"; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 3½ points lower on ⅛", 1½ points lower on ¼", and 2 points lower on ⅜", W10; Sharon, Pa. M6, 1 point higher on ⅛", 2 points lower on ¼" and ⅜"; Wheatland, Pa. W9, 2 points lower on ⅛", ¼", ⅜". Following make ½" and larger: Lorain, O. N3; Youngstown R2 and 36¼% on 3½" and 4"; Youngstown Y1; Aliquippa, Pa. J5; Fontana, Calif. K1 quotes 11½ points lower on ½" and larger continuous weld and 24% on 3½" and 4".

Columns B & E: Sparrows Point, Md. B2.

Columns C & F: Indiana Harbor, Ind., Y1; Alton, Ill., (Gary base) 2 points lower discount L1.

Column D: Butler, Pa. F6, ⅛-⅜"; Benwood, W. Va. W10, except plus 4% on ⅛", plus 6% on ¼", plus 13% on ⅜" and 15.5% on 3½", 4"; Sharon, Pa. M6, plus 2.5 on ⅛", 1 point lower on ⅜", ¾", 1½ points lower on 1" and 1¼", 2 points lower on 1½", 2", 2½" and 3"; Wheatland, Pa. W9, add 2 points on ⅛", ¼", ⅜", 1 point lower on ¾", 2 points lower on 1", 1½", 2", 1½ points lower on 1¼", 2½", 3". Etna, Pa. N2 and 15.5% on 3½", 4". Following quote only on ½" and larger: Lorain, O. N3; Youngstown R2, and 15½% on 3½" and 4"; Youngstown Y1, Aliquippa, Pa. J5 quotes 1 point lower on ¾", 2 points lower on 1", 1½", 2", 1½ points lower on 1¼", 2½" and 3".

SEAMLESS AND ELECTRIC WELD

Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	29.5	8.0	29.5	8.0
2½	58.5	5.82	32.5	11.5	32.5	11.5
3	76.5	7.62	32.5	11.5	32.5	11.5
3½	92.0	9.20	34.5	13.5	34.5	13.5
4	$1.09	10.89	34.5	13.5	34.5	13.5
5	1.48	14.81	37.0	16.0	37.0	16.0
6	1.92	19.18	37.0	16.0	37.0	16.0

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5 quotes 1½ pts lower on 2", 1 pt lower on 2½-6-in.; Lorain N3; Youngstown Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft., mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	13.45	16.47	15.36	15.36
1¼	13	16.09	19.71	15.61	18.19
1½	13	17.27	21.15	17.25	20.30
1¾	13	19.29	23.62	19.62	23.09
2	13	21.62	26.48	21.99	25.86
2¼	13	24.35	29.82	24.50	28.84
2¼	12	26.92	32.97	26.98	31.76
2½	12	29.65	36.32	29.57	34.76
2¾	12	32.11	39.33	31.33	36.84
3	12	34.00	41.64	32.89	38.70

CLAD STEELS

(Cents per pound)

Cladding Stainless	Plates — Carbon Base 10%	Plates — Carbon Base 20%	Strip Cold-Rolled Carbon Base Both Sides 10%	Strip Cold-Rolled Carbon Base Both Sides	Sheets Carbon Base 10%	Sheets Carbon Base 20%	Sheets Cu Base Both Sides
302 ...	....	....	....	....	19.75	26.24–27.50	77.00
304 ...	25.00	29.50	....	....	24.50	27.50–27.77	77.00
309 ...	30.50	35.00	....	....	....	....	....
310 ...	36.50	41.00	....	....	....	....	144.00
316 ...	29.50	34.00	....	....	26.00	35.92–36.50	....
317 ...	34.50	39.00	....	....	....	....	....
318 ...	33.50	38.00	....	....	....	....	....
321 ...	26.50	31.00–32.00	....	....	23.00	33.00	111.00
347 ...	27.50	32.00	....	....	24.00	33.50–33.83	130.00
405 ...	21.25	27.75	....	....	....	....	....
410 ...	20.75	27.25	....	....	....	....	....
Nickel .	33.55	45.15	41.00	54.00	....	....	....
Inconel.	41.23	54.18	....	....	....	....	165.00
Monel..	34.93	46.28	....	....	....	....	....
Copper*	....	....	23.70†	29.65‡	....	....	....

* Deoxidized. † 20.20c for hot-rolled. ‡ 26.40c for hot-rolled. Production points for carbon base products: Stainless plates, sheet, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; nickel, copper-clad strip, Carnegie, Pa., S18. Production point for copper-base sheets is Carnegie, Pa. A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers

6 in. and shorter:	
½-in. & smaller diam.	15
⅝-in. & ⅞-in.	18.5
1-in. and larger ..	17.5
Longer than 6 in.:	
All diams.	14
Lag bolts, all diams.:	
6 in. and shorter ...	23
over 6 in. long	21
Ribbed Necked Carriage	18.5
Blank	34
Plow	34
Step, Elevator, Tap and Sleigh Shoe	21
Tire bolts	21
Boiler & Fitting-Up Bolts	31

NUTS

	Reg.	Hvy.
H.P. & C.P. Square:		
½-in. & smaller	15	15
⅝-in. & ⅞-in. .	12	6.5
1-in.-1½-in. ..	9	1
1⅛-in. & larger	7.5	1
H.P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ⅞-in. .	16.5	6.5
1-in.-1½-in. ..	12	2
1⅛-in. & larger	8.5	2
C. P. Hex.:		
½-in. & smaller	26	22
⅝-in. & ⅞-in. .	23	17.5
1-in. & 1½-in.	19.5	12
1⅛-in. & larger	12	6.5

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaller..	35	28.5
⅝-in. & ⅞-in. ..	29.5	22
¾-in.-1½-in.	24	15
1⅛-in. & larger..	13	8.5
		Light
⅞-in. & smaller		35
½-in. to ⅞-in.		28.5
¾-in. to 1½-in.		26

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish .....48 &	10
Plated finishes .....31 &	10

HEXAGON CAP SCREWS

(1020 steel; packaged: per cent off list)

6 in. or shorter:	
⅝-in. & smaller	42
¾-in. through 1 in. .	34
Longer than 6 in.:	
⅝-in. & smaller	26
¾-in. through 1 in. .	4

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter	38
1 in. and smaller diam. x over 6 in.	26

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller ...	35
¼-in. diam. & larger ..	16
N.F. thread, all diams.	10

RIVETS

F.o.b. midwestern plants

Structural ½-in., larger 7.85c

⅞-in. under ..... 36 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers—List to list-plus-$1

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 70%, $43; 60%, $40.

Imported, net ton, duty paid, metallurgical grade, $33-$35.

ELECTRODES

(Threaded, with nipples, unboxed f.o.b. plant)

GRAPHITE

Inches Diam.	Length	Cents per lb
17,18,20	60,72	17.85
8 to 16	48,60,72	17.85
7	48,60	19.57
6	48,60	20.95

CARBON

35,40	110	8.03
30	65,84,110	8.03
24	72 to 104	8.03
17 to 20	34,90	8.03

STAINLESS STEEL

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	41.00	34.00	31.25
302...	41.25	36.75	31.50
303...	43.25	40.25	34.00
304...	43.25	38.75	33.00
309...	56.00	55.00	44.75
316...	57.00	59.00	49.25
321...	49.25	48.25	37.00
347...	53.75	52.25	41.50
410...	36.50	30.50	25.75
416...	37.00	37.00	26.25
420...	44.00	47.00	31.25
430...	39.00	31.00	26.25
501...	27.50	26.00	14.25
502...	28.50	27.00	15.25

Balt., Types 301-347 sheet, except 303 and 309 E2.

Brackenridge, Pa., sheets A4 quotes slight variations on Types 301-347.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502, A10.

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502 S18.

Cleveland, strip A7.

Detroit, strip M1 quotes 34.00c on Type 301; 36.50c, 302; 38.50c, 304; 58.50c, 316; 52.00c, 347; 30.50c, 410; 31.00c, 430.

Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.

Duquesne, Pa., bars U5.

Fort Wayne, Ind., bars and wire, except Types 501 & 502 J6 quotes slight variations on Types 301-347.

Gary, Ind., sheets except Type 416 U5.

Harrison, N. J., strip and wire C18.

Massillon, O., all items, R2.

McKeesport, Pa., strip, Type 410; bars & wire, Types 410 through 430 and 31.25c on Type 302, 33.75c on 303, 32.75c on 304, 48.75c on 316, 36.75c on 321, 41.25c on 347 F2.

McKeesport, Pa., bars, sheets except Type 416 U5.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars U5.

Muncie, Ind., wire I-7 quotes types 302, 304, 430.

Pittsburgh, sheets C18.

Reading, Pa., strip except 34.25c on Type 301 and 56.00c on 309; bars, except 31.50c on Type 301 and 45.25c on 309 C4.

Sharon, Pa., strip, except Types 303, 309, 416, 501, 502 and 34.25c on Type 301 S3.

So. Chicago, Ill., bars & structurals U5.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars U4.

Wallingford, Conn., strip W2 quotes 0.25c higher.

Washington, Pa., bars, sheets & strip, except 0.25c higher on Type 301 J3.

Washington, Pa., Types 301 through 347 sheets & strip except 303, 309; 316 sheets 62.00c, strip 64.00c W4

Watervliet, N. Y., structurals & bars A4 quotes variations on Types 301-347.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, A4 quotes slight variations on Types 301-347.

Youngstown, strip except Types 303, 309, 316, 416, 501 and 502 and 34.25c on Type 301 C8.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol 30.00-35.00

Toluol, one deg...26.00-33.00

Industrial xylol ..25.00-33.50

Per ton bulk ovens

Sulphate of ammonia .$32-$45

Cents per pound, ovens

Phenol, 40 (carlots, non-returnable drums) ...17.25

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted.)

	Cents
Sponge iron:	
98+% Fe, annealed.	18.00
Unannealed	14.50
Swedish, c.l.f. New York, in bags.	.8.85-9.95
Electrolytic iron:	
Annealed, 99.5% Fe.	42.50
Unannealed (99 + % Fe)	36.50
Unannealed, 99 + % Fe (minus 325 mesh)	53.50
Powder Flakes	48.50
Carbonyl Iron: 97.9-99.8% size 5 to 10 microns	.83.00-148.00
Aluminum:	
Carlots, freight allowed	31.00
Atomized, 500 lb drums, freight allowed	33.00
Antimony, 500 lb lots .	71.00
Brass, 20-ton lots.	28.25-32.00
Bronze, 10-ton lots	.51.25-60.00
Phosphor-Copper, 20-ton lots	50.00
Copper:	
Electrolytic	37.25
Reduced	34.75
Lead	22.50
Magnesium	.75.00-85.00
Manganese:	
Minus 100 mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	86.00
Nickel-Silver 5-ton lots	44.50
Silicon	38.50
Solder (plus cost of metal)	8.50
Stainless Steel, 302 ...	83.00
Zinc, 10-ton lots.	.20.00-28.00
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over ...	5.85
Less than 1000 lb ..	6.00
Molybdenum: 99.9%, minus 200 mesh	3.24
Chromium, electrolytic 99% Cr min.	3.50

METALLURGICAL COKE

Price net ton

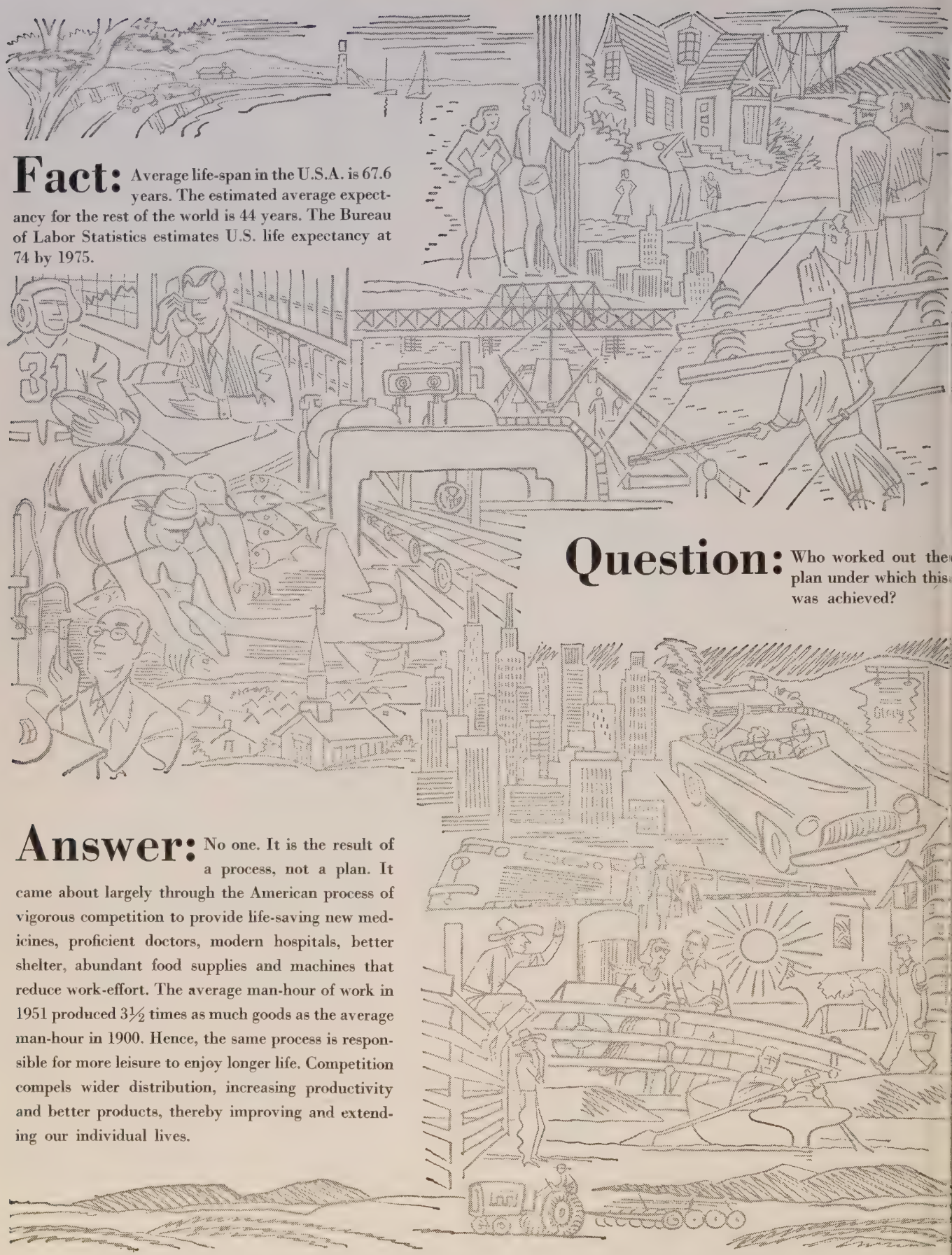
BEEHIVE OVENS

Connellsvll.fur.	.$14.50-15.00
Connellsvll.fdy.	..16.50-17.50
New River foundry ...	20.80
Wise county, foundry..	15.95
Wise county, furnace..	15.20

OVEN FOUNDRY COKE

Kearney, N. J. ovens.	$22.75
Everett, Mass., ovens New England, del.	..*24.80
Chicago ovens	23.00
Chicago, del.	24.50
Terre Haute, ovens	22.50
Milwaukee, ovens	23.75
Indianapolis, ovens ..	22.75
Chicago, del.	26.62
Cincinnati, del.	25.85
Detroit, del.	27.05
Ironton, O., ovens	22.50
Cincinnati, del.	25.12
Painesville, O., ovens.	24.00
Cleveland, del.	25.82
Erie, Pa., ovens	23.50
Birmingham, ovens ..	20.30
Cincinnati, del.	25.23
Philadelphia, ovens ...	22.70
NevilleIsland,Pa.,ovens	23.00
Swedeland, Pa., ovens.	22.60
St. Louis, ovens	
St. Louis, del.	25.40
Portsmouth, O., ovens	22.50
Cincinnati, del.	25.12
Detroit, ovens	24.00
Detroit, del.	25.00
Buffalo, del.	26.58
Flint, del.	26.73
Pontiac, del.	25.56
Saginaw, del.	27.08

*Or within $4.55 freight zone from works.



Fact: Average life-span in the U.S.A. is 67.6 years. The estimated average expectancy for the rest of the world is 44 years. The Bureau of Labor Statistics estimates U.S. life expectancy at 74 by 1975.

Question: Who worked out the plan under which this was achieved?

Answer: No one. It is the result of a process, not a plan. It came about largely through the American process of vigorous competition to provide life-saving new medicines, proficient doctors, modern hospitals, better shelter, abundant food supplies and machines that reduce work-effort. The average man-hour of work in 1951 produced 3½ times as much goods as the average man-hour in 1900. Hence, the same process is responsible for more leisure to enjoy longer life. Competition compels wider distribution, increasing productivity and better products, thereby improving and extending our individual lives.

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THE COMPETITIVE SYSTEM DELIVERS THE MOST TO THE GREATEST NUMBER OF PEOPL

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, for delivery within switching limits, subject to extras.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140††[5]		Carbon	Floor
New York (city)	6.28	7.24	8.37	6.50	...	6.52	7.33	9.29§	6.38	6.74	8.01
JerseyCty(c'try)	6.09	6.94	8.12	6.36	...	6.22	7.03	8.99§	6.08	6.46	7.71
Boston (city) ..	6.45	7.23	8.39	6.40	...	6.30	6.82‡	10.80§	6.45	6.65	7.89
Boston (c'try)..	6.25	7.03	8.19	6.20	...	6.10	6.61‡	10.60§	6.25	6.45	7.69
Phila. (city) ...	6.09	7.05	8.20	6.29	7.29	6.35	7.19	10.50§	6.11	6.38	7.33
Phila. (c'try) ..	5.84	6.80	7.95	6.04	6.94	6.10	6.94	10.25§	5.86	6.13	7.08
Balt. (city) ...	5.74	7.04	8.22	6.27	...	6.25	6.87‡	...	6.37	6.33	7.61
Balt. (c'try) ..	5.54	6.84	8.02	6.07	...	6.05	6.67‡	...	6.17	6.13	7.41
Norfolk, Va. ..	6.78	...	...	...	...	6.04	7.30	...	6.30	6.30	7.15
Richmond, Va. .	5.74	6.57	8.38	6.14	...	5.91	6.59	...	6.72	6.86	8.00
Wash. (w'hse) .	6.05	7.26	8.49	6.50	...	6.50	7.26	...	6.60	6.65	7.86
Buffalo (del.)..	5.74	6.52	8.26	6.06	...	5.72	6.65‡	10.72	6.02	6.18	7.55
Buffalo (w'hse).	5.54	6.32	8.06	5.86	...	5.52	6.45‡	10.52	5.82	5.98	7.35
Pitts. (w'hse)..	5.54	6.32	7.65	5.59	6.90	5.47	6.15	10.10	5.65	5.65	6.89
Detroit (w'hse).	5.74	6.49	7.96	5.78	7.15	5.76	6.60	10.37	6.12	6.17	7.23
Cleveland (del.)	5.74	6.52	7.96	5.85	7.14	5.81	6.35‡	10.41	6.15	6.02	7.39
Cleve. (w'hse) .	5.54	6.32	7.76	5.65	6.94	5.61	6.15‡	10.21	5.95	5.82	7.19
Cincin. (w'hse).	5.87	6.39	8.12	5.79	...	5.77	6.66	10.52	6.12	6.17	7.31
Chicago (city)..	5.74	6.52	7.85	5.69	...	5.67	6.25‡	10.30	5.85	5.85	7.09
Chicago (w'hse)	5.54	6.32	7.65	5.49	...	5.47	6.05‡	10.10	5.65	5.65	6.89
Milwau. (city) .	5.90	6.68	8.01	5.85	...	5.83	6.51‡	10.37	6.01	6.01	7.25
Milwau. (c'try).	5.70	6.48	7.81	5.65	...	5.63	6.31‡	10.17	5.81	5.81	7.05
St. Louis (del.)	6.04	6.80	8.15	5.99	...	5.97	6.65‡	10.60	6.25	6.25	7.49
St. L. (w'hse) .	5.84	6.60	7.95	5.79	...	5.77	6.45‡	10.40	6.05	6.05	7.29
Kans. City (city)	6.40	7.20	8.40	6.35	...	6.35	7.20	...	6.50	6.60	7.80
Kans.Cty(w'hse)	6.20	7.00	8.20	6.15	...	6.15	7.00	...	6.30	6.40	7.60
Birm'hm (city).	5.75	6.55	6.90[2]	5.70	...	5.70	7.53	...	5.85	6.10	8.23
Birm'hm(w'hse)	5.60	6.40	6.75[2]	5.55	...	5.55	7.53	...	5.70	5.95	8.23
Los Ang. (city).	6.55	8.35[3]	9.45	6.60	10.75	6.45	8.35	11.80	6.50	6.70	8.80
L. A. (w'hse)..	6.35	8.15[3]	9.25	6.40	10.55	6.25	8.15	11.60	6.30	6.50	8.60
Seattle-Tacoma.	7.16	8.38	9.45	7.25	...	7.08	8.86	10.35§	6.52	6.89	8.73
SanFran.(w'hse)	6.64	7.88[3]	9.10[3]	6.42	...	6.32	8.20	11.30§	6.30	6.43	8.50

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ add 25-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb.; [5]—1000 to 1999 lb.

Ores

Lake Superior Iron Ore
(1952 prices not established; 1951 contract prices follow.)

Gross ton, 51½% (natural), lower lake ports. After adjustment for analysis, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in applicable lake vessel rates, upper lake rail, freights, dock handling charges and taxes thereon.

Old range bessemer	$8.70
Old range nonbessemer	8.55
Mesabi bessemer	8.45
Mesabi nonbessemer	8.30
High phosphorus	8.30

Eastern Local Ore
Cents per unit del., E. Pa.

Foundry and basic 56-62% concentrates contract	17.00

Foreign Ore
Cents per unit, c.l.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	24.00
North African hematites (spot)	26.00-28.00
Brazilian iron ore, 68-69% (spot)	32.00

Tungsten Ore
Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$65.00
Domestic scheelite, mines	65.00

Manganese Ore

Manganese, 48% nearby, $1.18-1.22 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 85c-87c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African	
48% 2.8:1	$39.00-42.00
48% 3:1	44.00-45.00
48% no ratio	30.00-32.00
South African Transvaal	
44% no ratio	$27.00-28.00
48% no ratio	34.00-35.00
Brazilian	
44% 25:1 lump	nom.
Rhodesian	
45% no ratio	$29.00
48% no ratio	31.50-32.00
48% 3:1 lump	50.00-51.00
Domestic—rail nearest seller	
48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb, molybdenum content, mines	$1.00

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $85, Palmerton, Pa.; $85, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $225 per gross ton of alloy, c.l. packed $237; gross ton lots, packed, $252; less gross ton lots, packed $269; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., Ashtabula, or Marietta, O. Base price: $227, Johnstown, Pa.; $225, Sheridan, Pa., Lynchburg, Va.; $228, Etna, Pa.; $226, Anaconda, Mont.

Shipment from Pacific Coast warehouses by one seller, add $33 to above prices f.o.b. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots $267; less gross ton lots, $284, f.o.b. Chicago. Add or subtract $2.30 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max, 0.15% C grade from above prices, 1c for max, 0.30% C, 1.5c for max 0.50% C, and 4.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal, 2" x D (Mn 96% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

Manganese, Electrolytic: 40,000 lb or more, 30c; 2000 to 39,999 lb, 32c; 250 to 1999 lb, 34c. Premium for hydrogen-removed metal, 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65 - 68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si 11.4c per lb of alloy, carload packed, 12.15c, ton lots 13.05c, less ton 14.05c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lot 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, Add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%.) Contract, $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max., C 0.4% max). Contract, ton lot, 2" x D, $4.90 per lb of contained Cb, less ton $4.95. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx, Ta 20% approx, and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $3.75 per lb of contained Cb plus Ta, deld.; less ton lots $3.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lot 47c, less ton lot 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 18c per lb of alloy; ton lots 19c; less ton lots 20.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 15c per lb of alloy; ton lots 16.50c; less ton lots 17.75c, f.o.b., Niagara Falls; freight allowed to St. Louis.

Simanal: (Approx 20% each Si, Mn, Al; bal. Fe) Lump, carload bulk 14.50c, packed 15.50c; ton lots, packed, 15.75c; less ton lots, packed, 16.25c per lb of alloy, delivered to destination within United States.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo f.o.b. Langeloth, $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb, contained Mo, f.o.b. Langeloth, Pa., $1.14, in cans; in bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.

Note: For current prices on silicon and briquetted alloys see pages 143, Aug. 11 issue; calcium and zirconium alloys, page 173, Aug. 4; chromium, vanadium, boron and tungsten alloys, page 161, July 21. Refractories prices appeared on page 173, Aug. 4 issue.

CEILING PRICES, IRON AND STEEL SCRAP

Prices as set forth in Office of Price Stabilization ceiling price regulation No. 5, as amended Feb. 5, 1952.

STEELMAKING SCRAP COMPOSITE

Aug. 14	$48.00
Aug. 7	43.00
July, 1952	42.60
Aug., 1951	44.00
Aug., 1947	39.00

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

Basing point ceiling prices per gross ton from which maximum shipping prices are computed on scrap of dealer and industrial origin; and from which ceiling on-line and ceiling delivered prices are computed on scrap of railroad origin.

Basing Point	Grade 1 No. 1 Bundles Dealer, Industrial	No. 1 Heavy Melt Railroad
Alabama City, Ala..	$39.00	$41.00
Ashland, Ky.	42.00	44.00
Atlanta, Ga.	39.00	41.00
Bethlehem, Pa. ...	42.00	44.00
Birmingham, Ala. .	39.00	41.00
Brackenridge, Pa. .	44.00	46.00
Buffalo, N. Y.	43.00	45.00
Butler, Pa.	44.00	46.00
Canton, O.	44.00	46.00
Chicago, Ill.	42.50	44.50
Cincinnati, O.	43.00	45.00
Claymont, Del. ...	42.50	44.50
Cleveland, O.	43.00	45.00
Coatesville, Pa. ...	42.50	44.50
Conshohocken, Pa..	42.50	44.50
Detroit, Mich.	41.15	43.15
Duluth, Minn.	40.00	42.00
Harrisburg, Pa. ...	42.50	44.50
Houston, Tex.	37.00	39.00
Johnstown, Pa. ...	44.00	46.00
Kansas City, Mo. .	39.50	41.50
Kokomo, Ind.	42.00	44.00
Los Angeles	35.00	37.00
Middletown, O.	43.00	45.00
Midland, Pa.	44.00	46.00
Minnequa, Colo. ...	38.00	40.00
Monessen, Pa.	44.00	46.00
Phoenixville, Pa. ..	42.50	44.50
Pittsburg, Calif. ..	35.00	37.00
Pittsburgh, Pa. ...	44.00	46.00
Portland, Oreg. ...	35.00	37.00
Portsmouth, O.	42.00	44.00
St. Louis, Mo.	41.00	43.00
San Francisco	35.00	37.00
Seattle, Wash.	35.00	37.00
Sharon, Pa.	44.00	46.00
Sparrows Pt., Md. .	42.00	44.00
Steubenville, O. ...	44.00	46.00
Warren, O.	44.00	46.00
Weirton, W. Va. ..	44.00	46.00
Youngstown, O. ...	44.00	46.00

Differentials from Base

Differentials per gross ton for other grades of dealer and industrial scrap:

O-H and Blast Furnace Grade

2. No. 1 Busheling	Base
3. No. 1 Heavy Melting ..	—$1.00
4. No. 2 Heavy Melting ..	— 1.00
5. No. 2 Bundles	— 1.00
6. Machine Shop Turnings.	—10.00
7. Mixed Borings and Short Turnings	— 6.00
8. Shoveling Turnings	— 6.00
9. No. 2 Busheling	— 4.00
10. Cast Iron Borings	— 6.00

Elec. Furnace and Fdry. Grades

11. Billet, Bloom & Forge Crops	+ 7.50
12. Bar Crops & Plate....	+ 5.00
13. Cast Steel	+ 5.00
14. Punchings & Plate Scrap	+ 2.50
15. Electric Furnace Bundles	+ 2.00
Cut Structurals & Plate:	
16. 3 feet and under	+ 3.00
17. 2 feet and under	+ 5.00
18. 1 foot and under	+ 6.00
19. Briquetted Cast Iron Borings	Base
Foundry, Steel:	
20. 2 feet and under	Base
21. 1 foot and under	+ 2.00
22. Springs and Crankshafts	+ 1.00
23. Alloy Free Turnings ...	— 3.00
24. Heavy Turnings	— 1.00
25. Briquetted Turnings ...	Base
26. No. 1 Chemical Borings	— 3.00
27. No. 2 Chemical Borings	— 4.00
28. Wrought Iron	+10.00
29. Shafting	+10.00
31. Old Tin & Terne Plated Bundles	—10.00

Unprepared Grades

When compressed constitutes:

32. No. 1 Bundles	— 6.00
33. No. 2 Bundles	— 9.00
34. Other than material suitable for hydraulic compression	— 8.00

Restrictions on Use

(1) Prices for Grades 11 and 23 may be charged only when shipped to a consumer directly from an industrial producer; otherwise ceiling prices shall not exceed prices established for grades 12 and 8, respectively.

(2) Prices established for Grades 26 and 27 may be charged only when sold for use for chemical or annealing purposes, and in the case of Grade 27, for briquetting and direct charge into an electric furnace; otherwise ceiling prices shall not exceed price established for Grade 10.

(3) Prices established for Grade 28 may be charged only when sold to a producer of wrought iron; otherwise ceiling price shall not exceed ceiling price for corresponding grade of basic open-hearth.

(4) Premiums for Grades 11-18, 20 and 21 may be charged only when sold for use in electric and acid open-hearth furnaces or foundries; or in basic O-H or blast furnace under NPA allocation or OPS authorization.

(5) Prices for Grade 29 may be charged only when sold for forging or rerolling purposes.

Differentials from Base

Differentials per gross ton above or below the price of Grade 1 (No. 1 railroad heavy melting steel) for other grades of railroad steel scrap:

2. No. 2 Heavy Melting Steel	—$2.00
3. No. 2 Steel Wheel	Base
4. Hollow Bored Axles and loco. axles with keyways between the wheelseats.	Base
5. No. 1 Busheling	— 3.50
6. No. 1 Turnings	— 3.00
7. No. 2 Turnings, Drillings & Borings	—12.00
8. No. 2 Cast Steel and uncut wheelcenters	— 6.00
9. Uncut Frogs, Switches.	Base
10. Flues, Tubes & Pipes ..	— 8.00
11. Structural, Wrought Iron and/or/steel, uncut	— 6.00
12. Destroyed Steel Cars ..	— 8.00
13. No. 1 Sheet Scrap	— 9.50
14. Scrap Rails, Random Lengths	+ 2.00
15. Rerolling Rails	+ 7.00
Cut Rails:	
16. 3 feet and under	+ 5.00
17. 2 feet and under	+ 6.00
18. 18 inches and under .	+ 8.00
19. Cast Steel, No. 1	+ 3.00
20. Uncut Tires	+ 2.00
21. Cut Tires	+ 5.00
Bolsters & Side Frames:	
22. Uncut	Base
23. Cut	+ 3.00
24. Angles, Splice Bars & Tie Plates	+ 5.00
25. Solid Steel Axles	+12.00
26. Steel Wheels, No. 3. oversize	Base
27. Steel Wheels, No. 3...	+ 5.00
28. Spring Steel	+ 5.00
29. Couplers & Knuckles ..	+ 5.00
30. Wrought Iron	+ 8.00
31. Fireboxes	— 8.00
32. Boilers	— 6.00
33. No. 2 Sheet Scrap	—13.00
34. Carsides, Doors, Car Ends, cut apart	— 6.00
35. Unassorted Iron & Steel	— 6.00
36. Unprepared scrap, not suitable for hydraulic compression	— 8.00

Preparation Charges

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of dealer or industrial origin, authorized by OPS are:

(1) For preparing into Grades No. 3, No. 4 or No. 2, $8.
(2) For hydraulically compressing Grade No. 1, $6 per ton; Grade No. 5, $8.
(3) For crushing Grade No. 6, $3. For preparing into:
(4) Grade No. 25, $6.
(5) Grade No. 19, $6.
(6) Grades No. 12, No. 13, No. 14, No. 16, or No. 20, $10.
(7) Grade No. 17 or No. 21, $11.
(8) Grade No. 18, $12.
(9) For hydraulically compressing Grade No. 15, $8.
(10) For preparing into Grade No. 28, $10.

Ceiling fees per gross ton which may be charged for intransit preparation of any grade of steel scrap of railroad origin shall be:

(1) For preparing into Grade No. 1 and Grade No. 2, $8.
(2) For hydraulically compressing Grade No. 13, $6.

For preparing into:

(3) Grade No. 16, $4.
(4) Grade No. 17, $5.
(5) Grade No. 18, $7.
(6) Grade No. 21, $4.
(7) Grade No. 23, $4.

Ceiling fees per gross ton which may be charged for intransit preparation of cast iron are limited to:

(1) For preparing Grade No. 8 into Grade No. 7, $9.
(2) For preparing Grade No. 3 into Grade No. 11, $7.
(3) For preparing Grade No. 3 into Grade No. 1, $4.

CAST IRON SCRAP

Ceiling price per gross ton for following grades shall be f.o.b. shipping point:

Cast Iron:

1. No. 1 (Cupola)	$49.00
2. No. 2 (Charging Box) ..	47.00
3. No. 3 (Hvy. Breakable).	45.00
4. No. 4. (Burnt Cast)	41.00
5. Cast Iron Brake Shoes..	41.00
6. Stove Plate	46.00
7. Clean Auto Cast	52.00
8. Unstripped Motor Blocks	43.00
9. Wheels, No. 1	47.00
10. Malleable	55.00
11. Drop broken machinery.	52.00

OPEN MARKET

(Delivered prices include broker's commission. Asterisk [*] denotes nominal price.)

Birmingham
(Delivered)

No. 1 cupola cast	$42.00
Stove plate	37.00
Charging box cast.....	39.00-40.00
Heavy breakable	36.00-37.00
Drop broken machinery	42.00-43.00
Unstripped motor blocks	35.00-36.00

Boston
(F.o.b. shipping point)

No. 1 cupola cast	40.00
Heavy breakable	36.00
Stove plate	34.00-35.00
Unstripped motor blocks	30.00

Buffalo
(Delivered)

No. 1 heavy melting	43.00
No. 2 heavy melting	43.00
No. 1 bundles	44.00
No. 1 busheling	44.00
No. 2 bundles	43.00
Machine shop turnings ..	34.00
Mixed borings, turnings..	38.00
Cast iron borings	38.00
Short shoveling turnings.	38.00
No. 1 cupola cast 45.00-46.00	
No. 1 machinery cast....46.50-47.50	

Chicago
(Delivered)

No. 2 heavy melting ..	42.50
No. 2 bundles	42.50
Machine shop turnings.	33.50
Mixed borings, turnings	37.50
Shoveling turnings	37.50
Cast iron borings	37.50
No. 1 cupola cast	48.00-49.00
Charging box cast.....	47.00-48.00
Heavy breakable	46.00-47.00
Burnt cast	40.00-41.00
Cast iron brake shoes..	40.00-41.00
Stove plate	43.00-44.00
Clean auto cast	50.00-52.00
Unstripped motor blocks	36.00-37.00
Malleable	60.00-61.00
Drop broken machinery	52.00-53.00

Cleveland
(Delivered)

No. 1 heavy melting...	43.00
No. 2 heavy melting...	43.00
No. 1 bundles	44.00
No. 2 bundles	43.00
Machine shop turnings .	34.00
Mixed borings, turnings	38.00
Shoveling turnings	38.00
Cast iron borings	38.00
(F.o.b. shipping point)	
No. 1 cupola	49.00
Charging box cast	47.00
Burnt cast	41.00
Stove plate	46.00
Clean auto cast	52.00
Unstripped motor blocks	43.00
Malleable	55.00
Drop broken machinery	52.00

Detroit
(F.o.b. shipping point)

No. 1 cupola cast	49.00
Heavy breakable	45.00
Clean auto cast	52.00
Unstripped motor blocks	43.00
Drop broken machinery	52.00
Charging box cast	47.00

†Ceiling price.

Los Angeles
(Delivered)

No. 2 bundles	29.00
No. 1 cupola cast	42.00-44.00

New York
(Brokers' buying prices)

Cupola cast	40.00-42.25
Unstripped motor blocks	36.00-37.00

Philadelphia
(Delivered)

No. 1 heavy melting ..	42.50
No. 2 heavy melting ..	42.50
No. 1 bundles	42.50
No. 2 bundles	42.50
No. 1 busheling	42.50
Mixed borings, turnings	34.50
Machine shop turnings.	32.50
Short shoveling turnings	34.50
No. 1 cupola cast	45.50
Unstripped motor blocks	41.00
Heavy breakable	45.00
Machinery cast	52.00

†Ceiling price. ‡Nominal.
§Shipping point.

Pittsburgh
(Delivered)

No. 2 heavy melting ..	44.00
No. 1 bundles	45.00
No. 2 bundles	44.00
Machine shop turnings.	35.00
Shovel turnings	39.00
No. 1 cupola cast	47.00
Heavy breakable	45.50

†Ceiling price.

San Francisco
(Delivered)

No. 2 bundles	30.00
No. 1 cupola cast	46.00

Seattle
(F.o.b. shipping point)

No. 2 bundles	29.50
No. 1 cupola cast	36.00
Heavy breakable	40.00
Unstripped motor blocks	38.00

St. Louis
(Delivered)

No. 1 cupola	41.00
Unstripped motor blocks	39.00

Youngstown
(Delivered)

No. 2 heavy melting....	43.00
No. 2 bundles	43.00
Machine shop turnings..	34.00

HAMILTON, ONT.
(Delivered Prices)

Heavy Melt.	$35.00
No. 1 Bundles	35.00
No. 2 Bundles	35.00
Mechanical Bundles ...	31.50
Mixed Steel Scrap	31.00
Mixed Borings, Turnings	32.00
Rails, Remelting	35.00
Rails, Rerolling	38.00
Busheling	29.50
Bushelings new factory:	
Prep'd	33.00
Unprep'd	31.00
Short Steel Turnings ..	32.00
Cast Iron Grades†	
No. 1 Machinery Cast..	50.00

† F.o.b., shipping point.

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The Dempster-Balester, equipped with Auxiliary Compression Door, offers you the nearest thing available to automatic baling. Every phase in the baling cycle is operated by hydraulic controls from the moment scrap is dumped into the Skip-Pan Loader until the finished bale is ejected. Photos show the Dempster-Balester Model "275" in each of the six phases in the continuous baling operation. 1—Skip-Pan is loaded. 2—Skip-Pan dumps scrap into charging box. 3—Auxiliary Compression Door compresses scrap with a 45-ton force while Skip-Pan returns to loading position. 4—Auxiliary Compression Door completes compression cycle. 5—Charging box door closes and scrap is baled. 6—Finished bale is ejected as Skip-Pan starts reloading. This "275" turns out 4½ to 5 tons of baled scrap per hour with the Auxiliary Compression Door. This door completely eliminates in some operations, and materially reduces in others, the costly process of tying up two or three extra men as arrangers. For complete information on how to bale your scrap at lowest cost, write or clip the coupon below. A product of Dempster Brothers, Inc.

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☐ FORM 128-125-A—Portable presses that produce 125 to 175 bales.

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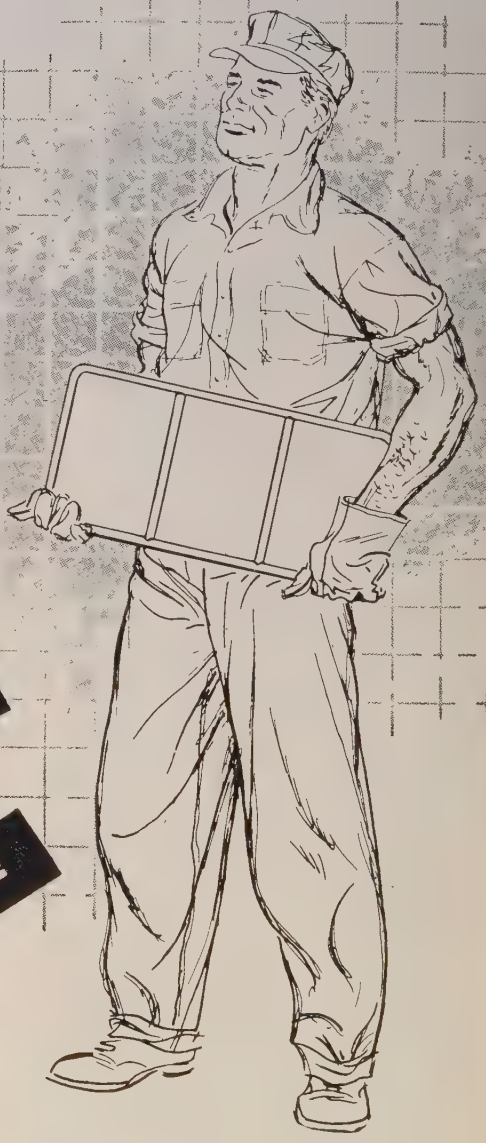

AMERICAN ZINC SALES COMPANY

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AMERICAN ZINC, LEAD & SMELTING COMPANY

Columbus, O. Chicago St. Louis New York

The Metal Market

From Rod to Wire in Ten Stands

Copper or brass rods are quickly reduced to wire in ten-stand mills at Chase Brass & Copper Co., Kennecott Copper Corp. subsidiary, Waterbury, Conn. One mill, above, takes ¾-inch rod down to 11/32 inch, and another mill reduces 11/16-inch rod to 9/32 inch or ⅝ inch to ¼ inch. Finished wire can be made as fine as 10/1000 inch diameter. It is rolled into 20 or 30-pound coils

Possible increased military buying of copper seen as threat to present balance between supply and demand. Price tone firms in zinc; eases in tin

NONFERROUS metal consumers are on the lookout for new signposts to guide them in establishing policies for the remainder of this year and early 1953. Some already have appeared and many more are coming into view. In some metals a transition is being made from a sellers' to a buyers' market; in others, from tightly controlled markets to free trading.

Defense Needs—Copper remains under the Controlled Materials Plan even though balance has been attained between supply and demand, the latter including some 8000 tons a month for the strategic stockpile.

The satisfactory position of the copper market may be transitory. Watch for a possible spurt in copper buying to cover military requirements. This would place a strain on the delicate supply-demand balance and may mean a delay in further decontrol of the metal.

Optimistic—H. Y. Bassett, vice president and general manager, Wolverine Tube Division, Calumet & Hecla Consolidated Copper Co., Boston, reveals the optimism that is general among consumers. He says his company is in a position to increase the production level of its tubular products through the third quarter. "Permission has also been granted," he says, "to purchase foreign copper on the same historical basis that has been applied to domestic copper. For the past year and a half, our industry's basis for domestic copper allocation has been 80,000 tons a month. With an estimated 50,000 tons of foreign copper being made available, this would represent an increase to 130,000 tons a month.

"This could mean that a 25 per cent additional amount of copper would be available to the industry . . ."

Scrap Intake Dips—A serious decline in copper scrap intake has developed with brass and bronze ingot makers. Receipts are so low some producers may be forced to buy larger quantities of foreign refined copper to make ingots. This industry's advisory committee recommends that allocations of controlled materials be continued on the same historical pattern as previously. Most industry members fear scrap dealers are withholding scrap from the market in the hope that higher prices for domestic refined copper may be in the offing. This would result in a red metal scrap price boost.

Tin Market Eases — The government's action permitting private importers of tin to resume operations is an encouraging move toward eventual decontrol of tin and probably toward lower price levels. Although RFC continues to quote $1.215 for prompt delivery, the outside market is lower with futures quoted down to $1.19 for October delivery. You still must have NPA allocation certificates and, although you may buy tin from suppliers you select, NPA regulations prevent you from building inventories above prescribed levels.

End-use controls on secondary tin plate have been removed. Coating weight of terne plate for roofing is also increased, now 40 pounds per double base box compared with 20 pounds formerly.

Zinc Unsettled — Advance of ½-cent in the price of zinc to the basis of 14.00c, East St. Louis, only five days after the price had been dropped 1½ cents to 13.50c left the industry gasping. The partial recovery was attributed to the fact that demand for metal at the 13.50-cent level was more than could be satisfied by the interest initiating the original price cut; the spurt in business was not enjoyed by all sellers, however. Some traders expect further advances and possibly a return to the 15-cent basis.

England Eases Restrictions

Unless Britain's Tory government crumbles in the next 60 days, free trading of lead on the London Metal Exchange by October will be a certainty. Tin already has the go-ahead. Zinc and copper will follow lead unless dollars taken out of the country by American sellers overbalanced the dollars earned by free trading.

Battery Makers Defer Purchases

Lead suppliers still aren't happy about demand from battery people who should be getting down to business soon. Early estimates placed production of automotive type batteries at 23 million units. No one in the trade believes that mark possible. Even revised guesses of 18 million units are thought too high.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 24.50c, Conn. Valley; Lake 24.62½c, delivered.

Brass Ingots: 85-5-5-5 (No. 115) 27.25c, 88-10-2 (No. 215) 40.00c; 80-10-10 (No. 305) 33.00c; No. 1 yellow (No. 405) 23.25c.

Zinc: Prime western 14.00c; brass special 14.25c; intermediate 14.50c, East St. Louis; high grade 15.35c, delivered.

Lead: Common 15.80c; chemical 15.90c; corroding 15.90c, St. Louis.

Primary Aluminum: 99% plus, ingots 20.00c, pigs 19.00c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 20.50c; No. 12 foundry alloy (No. 2 grade) 19.50c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 18.80c; grade 2, 18.60c; grade 3, 18.40c; grade 4, 18.20c.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 24.50c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt 121.50c.

Antimony: American 99-99.8% and over but not meeting specifications below 39.00c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 39.50c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 56.50c; 25-lb pigs, 59.15c; "XX" nickel shot, 60.15c; "F" nickel shot or ingots, for addition to cast iron, 56.50c. Prices include import duty.

Mercury: Open market, spot, New York, $188-$191 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $1.56 per lb of alloy, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2.00 del; special or patented shapes $2.15.

Cobalt: 97.99%, $2.40 per lb for 500 lb (kegs); $2.42 per lb for 100 lb (case); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 83.25c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $24-$25 per troy ounce.

Iridium: $200 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Ceiling prices, cents per pound, f.o.b. mill, effective July 1, 1952)

Sheet: Copper 45.52; yellow brass 40.17; commercial bronze, 95% 45.15; 90% 44.38; red brass, 85% 43.10; 80% 42.34; best quality, 41.35; nickel silver, 18%, 55.08; phosphor-bronze grade A, 5%, 64.71.

Rod: Copper, hot-rolled 41.37; cold-drawn 42.62; yellow brass free cutting, 33.85; commercial bronze 95%, 44.84; 90% 44.07; red brass 85%, 42.79; 80%, 42.03.

Seamless Tubing: Copper 45.56; yellow brass 43.18; commercial bronze, 90%, 47.04; red brass, 85%, 46.01.

Wire: Yellow brass 40.46; commercial bronze, 95%, 45.44; 90%, 44.67; red brass, 85%, 43.39; 80%, 42.63; best quality brass, 41.64.

(Base prices, effective July 1, 1952)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 32.795; 30,000 lb lots, 32.92; l.c.l., 33.42. Weatherproof, 100,000 lb, 33.60; 30,000 lb, 33.85; l.c.l., 34.35. Magnet wire del., 15,000 lb or more, 38.75; l.c.l., 39.50.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders. Prices in new schedule, effective as of Aug. 4, will be 5 per cent higher.)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	30.1	...	...
0.135-0.096	12-48	30.6	...	...
0.095-0.077	12-48	31.2	29.1	33.2
0.076-0.061	12-48	31.8	29.3	33.4
0.060-0.048	12-48	32.1	29.5	33.7
0.047-0.038	12-48	32.5	29.8	34.0
0.037-0.030	12-48	32.9	30.2	34.6
0.029-0.024	12-48	33.4	30.5	35.0
0.023-0.019	12-36	34.0	31.1	35.7
0.018-0.017	12-36	34.7	31.7	36.6
0.016-0.015	12-36	35.5	32.4	37.6
0.014	12-24	36.5	33.3	38.9
0.013-0.012	12-24	37.4	34.0	39.7
0.011	12-24	38.4	35.0	41.2
0.010-0.0095	12-24	39.4	36.1	42.7
0.009-0.0085	12-24	40.6	37.2	44.4
0.008-0.0075	12-24	41.9	38.4	46.1
0.007	12-18	43.3	39.7	48.2
0.006	12-18	44.8	41.0	52.8

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— R317-T4	——Hexagonal—— R-317-T4	17S-T4
0.125	52.0	....	....
0.156-0.0188	44.0	....	....
0.219-0.313	41.5	....	....
0.375	40.0	46.0	48.0
0.406	40.0	....	....
0.438	40.0	46.0	48.0
0.469	40.0	....	....
0.500	40.0	46.0	48.0
0.531	40.0	....	....
0.563	40.0	....	45.0
0.594	40.0	....	....
0.625	40.0	43.5	45.0
0.688	40.0	....	45.0
0.750-1.000	39.0	41.0	42.5
1.063	39.0	....	41.0
1.125-1.500	37.5	39.5	41.0
1.563	37.0	....	....
1.625	36.5	....	39.5
1.688-2.000	36.5	....	....

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $21.00 per cwt; add 50c cwt 100 sq ft to 140 sq ft. Pipe: Full coils $21.00 per cwt. Traps and bends: List prices plus 50%.

ZINC

Sheets 23.00c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 21.25c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 22.50c; over 12-in., 22.50-23.00c.

"A" NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 77.00c. Strip, cold-rolled, 83.00c. Rods and shapes, 73.00c. Plates, 75.00c. Seamless tubes, 106.00c.

MONEL

(Base prices f.o.b. mill)

Sheets, cold-rolled 60.50c. Strip, cold-rolled 63.50c. Rods and shapes, 58.50c. Plates, 59.50c. Seamless tubes, 93.50c. Shot and blocks, 53.50c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb, 55.00-62.00c; 25 to 99 lb, 45.00-52.00c; 100 lb to 5000 lb, 41.00c.

TITANIUM

(Prices per lb 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled 38.34c; oval 37.84c.

Nickel Anodes: Rolled oval, carbonized, carloads, 74.50c; 10,000 to 30,000 lb 75.50c; 3000 to 10,000 lb 76.50c; 500 to 3000 lb 77.50c; 100 to 500 lb, 79.50c; under 100 lb, 82.50c; f.o.b. Cleveland.

Nickel Chloride: 36.50c in 100 lb bags; 34.50c in lots of 300 lb through 10,000 lb; 34.00c over 10,000 lb, f.o.b. Cleveland, freight allowed on 300 lb or more.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers 86.7c; 100 or 350 lb drums only, 100 to 600 lb 71.60c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Tin Anodes: Bar, 1000 lb and over, $1.42; 500 to 999 lb, $1.425; 200 to 499 lb, $1.43; less than 200 lb, $1.445. Freight allowed east of Mississippi and north of Ohio and Potomac.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl; less than 2000 lb $1.11; more than 2000 lb $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers.

Stannous Chloride (Anhydrous): In 400 lb bbl 98.5c; 100 lb kegs 99.5c. Freight allowed.

Scrap Metals

Brass Mill Allowances

Ceiling prices in cents per pound for less than 20,000 lb, f.o.b. shipping point, effective June 26, 1951.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	21.50	21.50	20.75
Yellow Brass	19.125	18.875	17.875
Commercial Bronze			
95%	20.50	20.25	19.75
90%	20.50	20.25	19.75
Red Brass			
85%	20.25	20.00	19.375
80%	20.125	19.875	19.375
Muntz metal	18.125	17.875	17.375
Nickel silver, 10%	21.50	21.25	10.75
Phos. Bronze, 5%	25.25	25.00	24.00

Copper Scrap Ceiling Prices

(Base prices, cents per pound, less than 40,000 lb f.o.b. point of shipment)

Group 1: No. 1 copper 19.25; No. 2 copper wire and mixed heavy 17.75; light copper 16.50; No. 1 borings 19.25; No. 2 borings 17.75; refinery brass, 17.00 per lb of dry Cu content for 50 to 60 per cent material and 17.25 per lb for over 60 per cent material. Group II: No. 1 soft red brass solids 18.50; No. 1 composition borings 19.25 per lb of Cu content plus 63 cents per lb of tin content; mixed brass borings 19.25 per pound of Cu content plus 60 cents per lb of tin content; unlined red car boxes 18.25; lined red car boxes 17.25; cocks and faucets 16.00; mixed brass screens 16.00; zincy bronze solids and borings 16.25.

Aluminum Scrap Ceiling Prices

(Cents per pound, f.o.b. point of shipment, less than 5000 lb)

Segregated plant scrap: 2s solids, copper free, 10.50; high grade borings and turnings, 8.50; No. 12 piston borings and turnings, 7.50. Mixed plant scrap: Copper-free solids, 10.00; dural type, 9.00. Obsolete scrap: Pure old cable, 10.00; sheet and sheet utensils, 7.25; old castings and forgings, 7.75; clean pistons, free of struts, 7.75; pistons with struts, 5.75.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Lead: Heavy 12.00-12.25; battery plates 7.00-7.50; linotype and stereotype 13.50-14.00; electrotype 12.00-12.50; mixed babbitt 14.50-14.75.

Zinc: Old zinc, 6.00-6.50; new die cast scrap, 6.00-6.50; old die cast scrap, 5.00-5.50.

DAILY PRICE RECORD

1952	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Aug. 12-14	24.50	15.80	14.00	121.50	20.00	39.00	56.50	83.25
Aug. 11	24.50	15.80	13.50–14.00	121.50	20.00	39.00	56.50	83.25
Aug. 6-9	24.50	15.80	13.50	121.50	20.00	39.00	56.50	83.25
Aug. 4-5	24.50	15.80	15.00	121.50	20.00	39.00	56.50	83.25
Aug. 1-3	24.50	15.80	15.00	121.50	19.00	39.00	56.50	83.25
July Avg.	24.50	15.80	15.00	121.50	19.00	39.00	56.50	82.885
June Avg.	24.50	15.06	15.74	121.50	19.00	39.00	56.50	82.75
May Avg.	24.50	15.519	19.50	121.50	19.00	42.077	56.50	85.356
Apr. Avg.	24.50	18.723	19.50	121.50	19.00	49.077	56.50	88.00
Mar. Avg.	24.50	18.80	19.50	121.50	19.00	50.00	56.50	88.00
Feb. Avg.	24.50	18.80	19.50	121.50	19.00	50.00	56.50	88.00
Jan. Avg.	24.50	18.80	19.50	109.404	19.00	50.00	56.50	88.00

NOTE: Copper: Electrolytic, del. Conn. Valley, Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

Steel Bars . . .

Bar Prices, Page 155

Philadelphia — Civilian consumers of hot carbon bars report that inventories are building up a little more rapidly than they had dared expect, but that incoming shipments from mills are far short of what they need and probably will continue so over rest of the year.

Boston—High ratings taking directives, set-asides for defense and pressure for converter allotments have narrowed openings for fourth quarter.

New York—Opening of books now on hot carbon bars for fourth quarter is more of a formality than anything else. No buyers, without high government ratings, will be able to place new tonnage for delivery in that period.

Pittsburgh—Customers with orders on steel companies' books for steel bars may have to wait three months to get them. Production is strong, but preference on filling orders is being given to defense and past due tonnage. No fourth-quarter orders wil be taken.

Chicago—Bars are in the tightest category of all steel products. Mills are booked solid for rest of this year and carryovers run well into next year.

Tubular Goods . . .

Tubular Goods Prices, Page 159

New York—Merchant pipe producers were able to resume shipments as soon as the steel strike was over, by virtue of the fact they normally keep a stock ahead.

St. Louis — Pipe demand grows heavier. Pipemakers here were not shut down by the strike, and continue to make deliveries on schedule. Supply houses are putting on more pressure for galvanized pipe.

Sheets, Strip . . .

Sheet and Strip Prices, Page 155 & 156

New York—Even sheet producers who were able to keep going at least in part throughout the steel strike say that they will have no new hot and cold-rolled tonnage for their regular civilian customers in the fourth quarter. The situation with regard to specialties is not as bad. Some producers of enameling stock say they will be able to supply their customers with at least 40 to 50 per cent of what they had originally planned to ship in the third quarter. Producers are fairly in balance on high silicon sheets, but tight on the lower grades. Straight chrome sheets are in easy supply, although one large producer says there has been a very definite pick-up in demand recently.

Philadelphia—Although sheet consumers need steel, they are not pressing as hard for tonnage as might be expected. Most had a fair cushion of inventories to meet the rather restricted volume of inquiries over recent weeks.

Detroit—The scramble for sheets now going on would indicate the shortage is more severe than it has been at any time in the past. But

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many sources believe the hectic ma ket conditions will not be of lo duration. Some automotive men se ously question next year's dema and believe intense competition w have returned. Inclination is not make long-term conversion comm ments.

Boston — Before cold-rolled st stocks are again in balance wi many consumers more hot-roll tonnage must reach converting mi for cold reduction.

Pittsburgh—There is little like hood that any new tonnage will placed on the books for fourth qua ter except by military directi

Chicago — Except for electri grades, sheet producers have openings in their rolling schedules fest of 1952. Demand is tremendc but much of it won't be accomm dated soon. Requirements for galva ized are high.

St. Louis—Sheet demand holds hig and output is at capacity. Strip p duction is down to about 90 per ce of capacity, due to mill breakdow

Birmingham—Sheet users, depriv of supplies because of the strike, a making strong bids to get on t books for as early delivery as po sible.

Wire . . .

Wire Prices, Page 157

Boston—Demand for wire speci ties and manufacturers' wire heavier than during the first h because of inventory depletions.

Commodity rate of $3.33 per gro ton on coiled steel rods, minimu weight 30 tons, Boston to Worcest is being established. The prese charge is $3.58 per gross ton milea commodity rate, minimum 25 gro tons.

Los Angeles—With building losi momentum, wire mesh and nail su plies are adequate. Columbia-Gene Steel Division's November and D cember wire books are still open.

Plates . . .

Plate Prices, Page 155

Boston—Producers of heavy pla are unable to take on much n tonnage for fourth quarter. Heav load of defense requirements sheet-strip mills also is hamperi plate production on them, althou congestion in light plates is expect to be cleared away before hea and wide gages are on schedule.

New York—Most plate sellers a setting up schedules for fourth qua ter, but have little or no capac available for new orders other th that being set aside for top milita requirements, warehouse quotas a certain types of conversion work.

Philadelphia—Buyers of plates civilian requirements believe they w not get caught up on needs un after turn of the year.

Pittsburgh — Production of st plates is strong. Any third-quar carryovers remaining at the end September will have to wait un military set-asides have been sat fied.

Chicago — Plate fabricators rep steel receipts are improving slo

with volume about what had been expected after end of the strike.

Birmingham—Large scale users of plates are getting some material with resumption of steel production, but a tight supply, especially in the heavier gages, is expected to persist well into next year.

Seattle—Plate fabricators report no large projects pending. Small operators are pinched by lack of materials, in some instances having had to taper off.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 155

Los Angeles—Valuation of engineering awards for southern California, southern Nevada and Arizona totaled $12,919,693 in July, 42.5 per cent lower than in June, lowest amount in the last 18 months. Survey by California State Division of Highways showed that average prices of plain reinforcing bars are 9.4c, 10½ per cent less than in the last quarter of 1951.

Seattle—Rolling mills are making every effort to speed shipment of back orders. Reinforcing orders in small tonnages are numerous and demand continues firm.

Semifinished Steel . . .

Semifinished Prices, Page 155

Detroit—Automakers trying to line up conversion arrangements are meeting with only limited success. One is reportedly trying to set up an arrangement for only 30 days' time, a suggestion of little attraction to mills. Billets, slabs and sheet bars are in demand.

San Francisco—There are no openings for third quarter on most steel mills' books, although some small tonnages are being accepted for fourth quarter.

Structural Shapes . . .

Structural Shape Prices, Page 155

Pittsburgh—Production on structural shapes is gaining momentum, although schedules are still erratic. No orders are being taken for fourth quarter which is expected to be filled by third-quarter carryovers. With fewer military demands being made on structurals, the situation may ease by December.

Philadelphia—While some structural fabricating shops are barely keeping going because of shortage of steel, others which thought they might be forced to suspend entirely before mill shipments reached a substantial volume believe now they will be able to carry on without a break. Shape production has come back after the strike more rapidly than expected. Fabricators are not being pressed greatly with new work.

Boston—Structural shops stepped up operating schedules but are behind on most projects. Some second and early third quarter deliveries are arriving.

New York—The local structural market is still dull. Relatively little industrial work, which would rate

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government approval, is going ahead, and there is little commerical work.

Birmingham—Structural shops are busy but are slowed up somewhat by lack of sufficient plates. Most construction projects are relatively small.

Tin Plate . . .

Tin Plate Prices, Page 156

Los Angeles—Kaiser Steel Corp., Fontana, Calif., shipped first hot-dipped tin plate produced from its new $20 million tin plate mill of 200,000 tons annual capacity.

Pig Iron . . .

Pig Iron Prices, Page 154

Philadelphia—Shortages in domestic pig iron are increasing interest in foreign iron, especially in view of reports that European demand for iron is easing and that sellers on the other side might lower export prices to attract business from this country. For some time prices on foreign iron have ranged around $82.50 to $85 c.i.f., far too high to interest American buyers. Recently, one offering of high grade European iron was made at $76 c.i.f.

With the proposed blast furnace of the newly organized Delaware River Steel Corp. scheduled to have a daily capacity of 1200 tons, opinion is that despite the fact some of this iron will go to the Wickwire Spencer Steel Division of Colorado Fuel & Iron Corp., Claymont, Del., considerable tonnage will be available for other consumers in the district. The furnace will be erected on river front property leased from the Wickwire Spencer Division of C. F. & I. In addition plans call for the construction of coking facilities large enough to meet requirements of the furnace, and docking facilities for which the Philadelphia District Army Engineers granted approval. If all goes as planned, construction on the $41.5 million development will get under way in about 60 days, with completion likely within 15 months from date of start. John M. Blair, lawyer, 505 Fifth Avenue, New York, is executive vice president.

Boston—Foundry iron shipments are off this month because of reduction in inventory limits to 30 days. Most shops can operate at current melt levels from stock to move within the limit.

New York—District foundries are showing greater interest in pig iron, although exerting no great pressure. Some still have more iron on hand than the 30 days' requirements which the government recently established as a maximum. Few foundries are operating at more than four days a week.

Pittsburgh—Pig iron demand is rising. Foundries in the area are not operating at full capacity, estimates placing it at 75 per cent.

Cleveland—Republic Steel Corp.'s blast furnace at its Warren, O., works is producing again after being idle since last April for relining and other repairs.

Chicago—Foundries are stepping u operations as they receive release on castings from customers wh issued suspensions on account of th steel strike. Thus demand for pi iron is increasing sharply.

St. Louis—Pig iron inventories i the hands of consumers are at a rec ord high for the year, averaging 9 to 120 days.

Scrap . . .

Scrap Prices, Page 162

Buffalo—Absence of new buyin in steelmaking grades of scrap faile to check the buoyant feeling whic swept dealers with the end o the steel strike. Dealers ar busy completing fairly substantia orders placed prior to the strike a ceiling levels. Sales were reported i borings and turnings at ceiling leve in the nearby area. All steelmakin grades are back up to ceilings, wit dealers awaiting new business. Ca grades also turned stronger with ne business reported. Cupola and No. machinery are still off about $1 to $ from ceiling levels.

Philadelphia—While leading grade of steel scrap continue at ceiling there is not a wild scramble for ton nage. Reports of some Pittsburg mills holding up shipments have ha a chilling effect on demand for oper hearth scrap here, with one distric mill restricting shipments on No. bundles. District consumers of lo phos scrap are specifying lightly a the moment. In cast scrap, unstripped motor blocks are now around $4 delivered, but offerings of $49, ceilin recently brought out such a volum of tonnage that market on this grad dropped to $45, delivered.

Boston—Strength in scrap price is accompanied by slight improve ment in district buying, both in ste and cast grades. Former is back t ceilings and cast is moving in tha direction.

New York—Brokers reduced buy ing prices on cupola cast to $40-$4 and advanced offerings for unstrip ped motor blocks to $36-$37. Ste scrap prices are unchanged, althoug market undertone is not quite a strong.

Pitsburgh—Scrap prices continu at ceiling with exception of som turning and cast iron scrap. Mil are buying in relatively small quant ities.

Detroit—Contrary to holding u orders as is being done in other dis tricts, presumably an indication c jammed railroad tracks, mills her are applying heavy pressure for ship ments. Shipping is against old order and with auto plants just now be ginning to return to volume produc tion, there is at least temporarily dearth of industrial scrap. Cas grades are in stronger demand. A grades are now at ceiling price

St. Louis—Scrap buying is at virtual standstill, but supplies ar tightening up and prices are firmin Only unstripped motor blocks, $ down, are quoted under ceilings.

Cleveland—Mills are taking all th scrap they can get, imparting strong undertone to the market. I many instances mills are leavin

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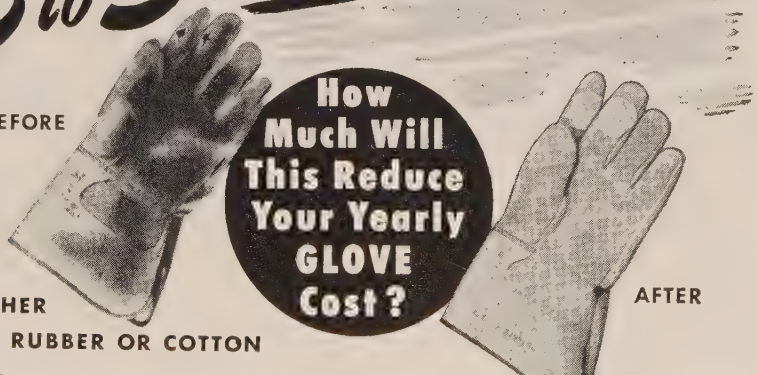

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scrap purchased during the strike at storage points for shipment during a possible future emergency. Other material is moving promptly. Steelmaking grades, as well as foundry grades, are at ceiling levels.

Birmingham—Even with settlement of the steel strike, the market here is quiet and there are few takers for most grades of melting, barring a few specialties. The cast market is relatively quiet.

Los Angeles—Steelmaking scrap is moving freely and mills are not willing to pay freight costs on remote material. There is no shortage of steel scrap in this district.

San Francisco—No. 1 cupola is firm at the recently established $46-a-ton delivered price. Demand is exceptionally heavy and indications are the price is headed higher. Steelmaking grades continue in ample supply with prices at ceilings, except for No. 2 bundles and turnings both $5 below the top allowable.

Seattle—Steel scrap of good quality is arriving in ample volume, enabling mills to add to inventory in anticipation of winter. Dealers have had opportunity to enalrge their stocks of prepared scrap and the flow to the mills is satisfactory. Mills are paying ceiling for melting and $5 under ceiling for bundles, $38 quoted for engine blocks. The foundry situation is reported satisfactory, plants being more than normally busy and receiving ample supplies of materials. Cast iron is offered freely, one plant reporting purchases at $36 as against $49 ceiling.

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 159

Pittsburgh—Replenishment of bolt and nut inventories depleted during the strike will be forestalled until producers can get steel. Military priorities for bar stock are cutting heavily into supply of material for bolts and nuts. While customers inquire, and new orders are being booked, no firm shipping promises are being made. In particularly short supply are bolts and nuts over ½-inch diameter.

Iron Ore . . .

Iron Ore Prices, Page 161

Birmingham—Dollar value of iron ore shipped through the Mobile, Ala., customs district in the first five months of 1952 for steel mills in this area was almost as great as total iron ore imports through Mobile for 1950. Iron ore imports through Mobile through May totaled $2,365,915. Only a slight increase, however, was recorded in total tonnage figures.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 159

Pittsburgh— Demand for foundry coke is not heavy. Foundries are not too active.

Chicago — With foundry activity gaining, demand for coke is expanding markedly. Fear of possible coal mining strike added to increased consuming needs accounts for the stronger tone.

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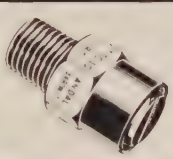

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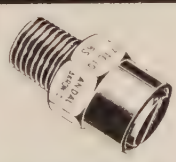

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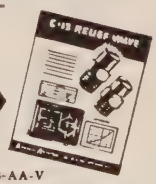

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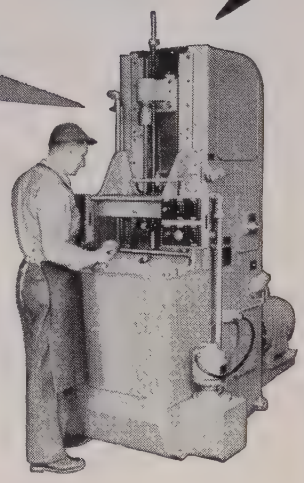

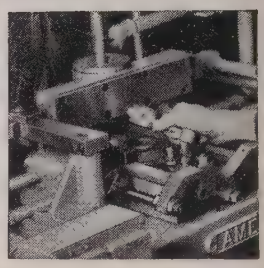

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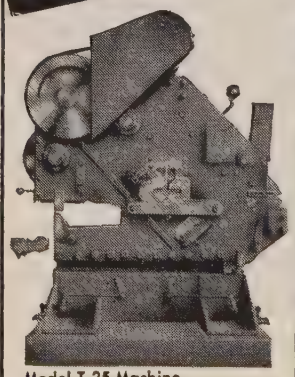

Model T-25 Machine

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	Model T-15	Model T-25
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to Shear		
Plates	7/16"	1/2"
Flat Bars	3" x 9/16"	3-3/16" x 5/8"
Tees	3-1/8" x 5/16"	4" x 3/8"
Angles	3-1/8" x 5/16"	4" x 3/8"
Round Bars	1-3/16"	1-3/8"
Square Bars	1"	1-1/4"

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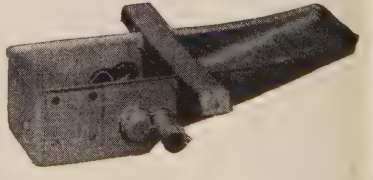

Toledo Stamping and Manufacturing Co.

90 Fearing Blvd., Toledo, Ohio

Detroit Office: 12800 Puritan Ave., Detroit 27, Mich.

Chicago Office: 333 North Michigan Ave., Chicago, Ill.

Warehouse . . .

Warehouse Prices, Page 161

Chicago — Warehouses report receipts of steel are accelerating but aggregate still is pitifully small. Coming in fastest are hot-rolled bars and hot and cold-rolled sheets. Structurals and plates are slowest. Search for steel isn't as extensive as was expected.

Boston — Shipments of finished steel reaching warehouses are in somewhat heavier volume than expected. Many bar racks are bare, notably heavier rounds; structural stock are low, also heavy plates.

Philadelphia—Due to some pick-up in mill shipments, district jobbers anticipate a slightly better movement this month.

Birmingham — Warehouse stocks are so far below normal as to be of minimum value to customers. Warehousemen expect a substantial improvement in receipt of steel within the next ten days to two weeks.

Los Angeles—Within the next few months distributors hope to equalize inventories, which now are 30-75 per cent of normal and badly out of balance. Warehouses are grading orders for priority shipment to defense users.

San Francisco—Steel distributors' business is good and stocks are getting into a little better shape.

Seattle—Jobbing houses expect the worst squeeze within the next 60 days while eastern mills get into full schedules. Coast mills are supplying some warehouse stock but items coming from the East, except for orders placed before the strike, will not reach the Coast for several weeks.

Ferroalloys . . .

Ferroalloy Prices, Page 161

Philadelphia—E. J. Lavino & Co., this city, expect to have its ferromanganese furnace at Sheridan, Pa., in operataion in about two weeks. The smaller of its two furnaces at Lynchburg, Va., may be in production within one week, but the larger may not be for at least two months as it is undergoing major repairs.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

000 tons, New York Central Railroad, diesel shop, Gardenville, N. Y., to Central Steel Co., Buffalo; Siegfried Construction Co., Buffalo, general contractor.

35 tons, Peter Frasse & Co., iron and steel warehouse, Tonawanda, N. Y., to Ernst Construction Co., Buffalo.

STRUCTURAL STEEL PENDING

600 tons, superstructure, multispan steel truss bridge, Merrimac river, Amesbury-Newburyport, Mass.; Harris Structural Steel Co., New York, low.

350 tons, including gates, stoplogs, tailrace, etc., The Dalles dam, Columbia river, Oregon; bids to U. S. Engineer, Portland, Oreg., in October.

000 tons, state bridge, Lehigh county, Pennsylvania; G. A. & F. C. Wagman Inc., Dallastown, Pa., low on general contract.

500 tons, University of Oregon Hospital, Portland; bids in.

73 tons, state bridge, Northampton county, Pennsylvania; Berlantii Construction Co., Harrison, N. J., low on general contract.

00 tons, Du Pont rayon plant, Richmond, Va.; bids closed Aug. 12.

750 tons, New York land shaft in connection with expansion of Lincoln Tunnel, Port of New York Authority, New York, bids Aug. 20; 500 to 600 tons for ventilator building on New York side will be brought out later; bids for 50,000 tons of cast iron segments for the additional traffic lane, noted in the July 21 issue of STEEL, will be closed at that time under separate contract.

300 tons, factory, RCA-Victor Division, Radio Corp. of America, Moorestown, N. J.; bids asked.

300 tons, field house, University of Connecticut, Storrs, Conn.

230 tons, Pan American Co. hangar, Seattle-Tacoma airport; bids in.

175 tons, state bridge, Monroe county, Pennsylvania; H. R. Miller, Lancaster, Pa., low on general contract.

145 tons, including 60 tons reinforcing, 310-foot Montana state bridge, Custer county; bids to Helena Aug. 13.

137 tons, state bridge, Northampton county, Pennsylvania; bids Aug. 29.

REINFORCING BARS . . .

REINFORCING BARS PLACED

320 tons, Elmendorf field barracks, Alaska, to Bethlehem Pacific Coast Steel Corp., Seattle; general contract to Valle-Sommers Co., Seattle, low $2,125,000.

210 tons, Washington state bridge, Chehalis, to Bethlehem Pacific Coast Steel Corp., Seattle; Fiorito & Co., Seattle, general contractors.

200 tons, including Everett court house, Kirkland high school and miscellaneous, to Bethlehem Pacific Coast Steel Corp., Seattle.

175 tons, New York Central Railroad, diesel shop, Gardenville, N. Y., to Bethlehem Steel Co., Lackawanna, N. Y.

150 tons, Everett, Wash., water reservoir, to Bethlehem Pacific Coast Steel Corp., Seattle.

100 tons, school gymnasium, Bellevue, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle.

REINFORCING BARS PENDING

3000 tons, The Dalles, Oreg., dam; bids to U. S. Engineer, Portland, Oreg., in October.

185 tons, Washington state highway bridges, King and Lewis counties; bids to Olympia, Aug. 19.

PIPE . . .

CAST IRON PIPE PENDING

250 tons or more, large diameter submarine mains 5400 feet; bids to Richland, Wash., Aug. 21.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Northern Pacific, 8 diesel-electric locomotive units, three 1600-hp road switching and three 1000-hp switching units, going to American Locomotive-General Electric Companies, Schenectady, N. Y., and one 1500-hp road switching unit and one 1200-hp switching unit to the Electro-Motive Division, General Motors Corp., La Grange, Ill.

RAILROAD CARS PLACED

Grand Trunk Western, 100 seventy-ton gondola cars, to General American Transportation Co., Chicago.

New York, New Haven & Hartford, 26 rail-diesel cars, to the Budd Co., Philadelphia.

New York, New Haven & Hartford, 100 fifty-ton steel flat cars, to own shops at Maybrook, N. Y. Railroad is inquiring for necessary underframes.

Missouri-Kansas-Texas, 500 fifty-ton box cars, to American Car & Foundry Co., New York.

Nashville, Chattanooga & St. Louis, 75 covered hopper cars, to Pullman-Standard Car Mfg. Co., Chicago.

RAILS PLACED

Central of New Jersey, 1190 tons, to Bethlehem Steel Co., Bethlehem, Pa.

Here's a C-F Lifter, working with a mobile crane, unloading a car of steel in record time. C-F Lifters can pick up, carry and unload more tonnage per hour, using less man and crane time than any other method because they are *designed* for economical operation.

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open-end ratchet wrench

invented, perfected and produced solely by TAC

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Full-arc hinge handle —work from any angle.

Heavy construction —stress tested for severe strains.

Crowfoot type needs no sockets! Built in 26 sizes.

sockets for each head size, multiplies uses.

64 Socket sizes from 3/8" to 4"—increments of 1/16"

Open ends fit over tubing down on fitting.

Unique design—entirely new principle.

Volume-manufactured in two styles—the socket type and the Crowfoot type, TAC Open End Ratchet Wrenches are scoring phenomenal time and labor savings throughout all Industry.

It is a matter of record that heretofore no tool was made that could — *in a limit of 7° ratcheting arc* — successfully tighten or back off nuts or fittings on tubing or other standing center assemblies. The speed with which TAC can complete difficult wrenching jobs, in anybody's hands, is amazing.

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WATER AND GAS LINES
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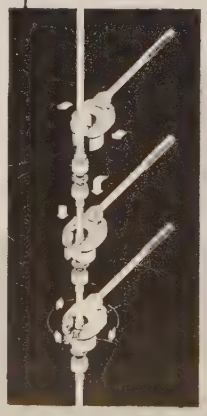

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Here and There in Metalworking . . .

CONSTRUCTION—ENTERPRISE—ORGANIZATIONAL CHANGES

Seidelhuber Gets RFC Loan

Reconstruction Finance Corp. assured Seattle of the largest new source of steel rolling mill products in many years, with its approval of a $760,000 loan to Seidelhuber Steel Rolling Mill Corp., that city. When coupled with the tax savings permitted by the $1,403,000 necessity certificate issued recently to the company, the speed of Seidelhuber's steel mill expansion program has been given a big boost. The loan will permit the company to enlarge its rolling mill facilities and enable the company to produce large structural steel bars and forging billets. In addition to the commerial grades of steel bars, Seidelhuber will produce alloy steels and special shapes, neither of which are produced in the Seattle region. When completed late this year, the new rolling mill will have a production capacity of 5000 tons per month.

Army Reopens West Coast Foundry

Ordnance Corps is taking over a World War II plant at Pittsburg, Calif., to make large castings for tanks. The plant will be operated by Columbia-Geneva Steel Division, United States Steel Co., Pittsburgh. About $9.5 million will be spent to convert the plant, known as Columbia Steel Foundry, Plancor 516.

Gleason Plans Plant Expansion

Gleason Works, Rochester, N. Y., will build a multimillion dollar plant addition, containing 66,000 square feet of floor space. Construction will begin at once and is scheduled for completion by the first of the year. The new space will be used largely for the manufacture of machines to make couplings.

Contract Awarded for Forging Plant

General contract for construction of aluminum forging facilities at Newark, O., for United States Air Force's heavy press program was awarded to Darin & Armstrong Inc., Detroit, by Kaiser Aluminum & Chemical Corp., Burbank, Calif. The contract calls for construction of the principal heavy press plant and auxiliary buildings covering 360,000 square feet, press foundations and installation of machinery and equipment at an estimated cost of $11,555,000. Construction is scheduled to be completed in about 15 months. The Newark plant, on the site of Kaiser's aluminum rod, bar, wire and cable works, is part of the Air Force's $389 million program to produce large aircraft parts with mammoth forging and extrusion presses. The Newark forging presses, rated at 35,000 tons and 25,000 tons of hydraulic pressure, are being built by E. W. Bliss Co. Canton, O. The country's largest existing forging press is 18,000 tons.

Ohio River Steel Resumes Operations

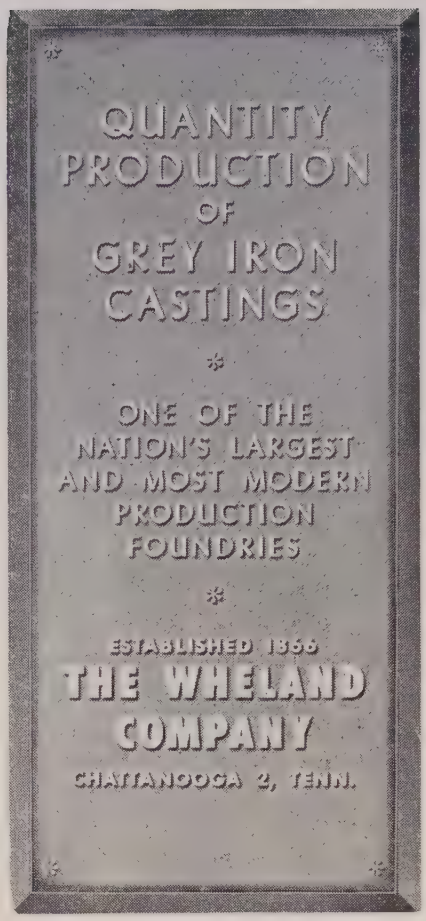
Ohio River Steel Division, Louis Berkman Co., is resuming operations after reaching a labor agreement at the former Follansbee Steel plant at Toronto, O. The mill has an ingot capacity of 12,000 tons per month and has been shut down since purchase last June.

Battelle Building Laboratory

Battelle Memorial Institute, Columbus, O., is constructing a million-dollar "special purpose" laboratory building. In the space provided by the new building, Battelle will be in a position to conduct an additional $2 million worth of research. The rate of research contracted rose from $9 million at the end of 1951 to the present rate of $12 million per year. During the past year, the staff has increased from 1384 to 1900.

Akron Firm Opens Dayton Branch

Industrial Products Sales Inc., a sales representative organization with headquarters in Akron, O., opened a district office at 238 W. Lafayette St., Dayton, O. John M.



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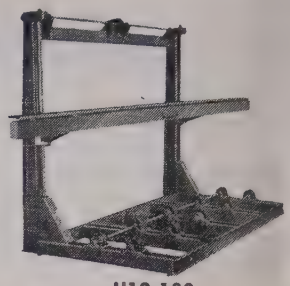

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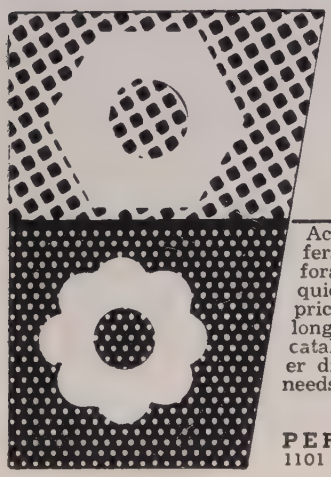

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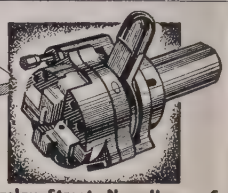

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Gallaher is in charge. The firm represents Standard Tube Co., Detroit; Logan Machine & Metal Stamping Co., Akron; Wilcox Forging Corp., Mechanicsburg, Pa.; Abbott Ball Co., Hartford, Conn.

Raybestos-Manhattan Appoints Agent

Raybestos-Manhattan Inc., Passaic, N. J., appointed Webster-Robinson Machinery & Supply Co. Inc., Tacoma, Wash., as its distributor of belting and other industrial rubber products in that area.

Fosters Technological Advancement

Formation of Council for Technological Advancement "to program, pioneer and promote ideas for a more dynamic American economy" was announced by William J. Kelly, Chicago industrialist and president of Machinery and Allied Products Institute, with which the Council is affiliated. The Council's program will be under the guidance of a board of trustees of 38 industrial executives of companies particularly indentified with technological advancement. Mr. Kelly is chairman of the group while Alexander Konkle, vice president of Machinery and Allied Products Institute, is executive vice chairman.

Victoreen Buys Pioneer Electronics

Victoreen Instrument Co., Cleveland, acquired Pioneer Electronics Corp., Salem, Mass., and will continue to operate it as a subsidiary. Cyrus W. Haller, Pioneer president, becomes president and director of the merged company.

Vapor Heating Forms Subsidiaries

Vapor Heating Corp., Chicago, established two export corporations to handle the sale and engineering of its steam generators for trains and industry and the company's train

Giant Food

It would take a good sized giant to attempt to eat this doughnut, and even he would chip his teeth. In reality, it is a huge steel casting designed for experimental use as a blast furnace bell. It was cast at the Johnstown, Pa., Works of U. S. Steel and will be used at a Pittsburgh plant

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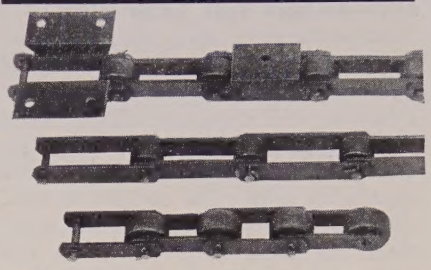

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Allis-Chalmers Buys Victor Plant

Allis-Chalmers Mfg. Co., Milwaukee, purchased the plant and remaining assets of Victor Electric Products Inc., Cincinnati. The Victor plant will become a part of Allis-Chalmers' Norwood Works in the Cincinnati area. The company's texrope drive section will be transferred from the West Allis Works to the Victor plant which will continue manufacture of small electric motors and motor driven fans.

Jet Engine Laboratory Planned

Aeronautical Division, Minneapolis-Honeywell Regulator Co., Minneapolis, is establishing a new jet engine laboratory, believed to represent the most comprehensive engine analog work ever attempted by a control manufacturer, to speed development work on jet engine controls. Equipped with a network of highly complex electronic computers, controllers and relays, the facilities which include a separate building for the work will permit jet controls to be designed and proved without ever leaving the ground.

Hydraulic Press Moves Branch Office

Hydraulic Press Mfg. Co., Mt. Gilead, O., moved its eastern district office to 352 Cedar Lane, Peoples Trust Co. Bldg., Teaneck, N. J. Regional manager is C. J. Ziegfeld.

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MCKAY ¼" TO 2" TWO-HIGH LEVELLER, 13" Diameter Rolls, (11) Levelling rolls, (2) Pinching rolls, with (1) 150 HP motor for main drive, (2) 7½ HP motors for screw down.

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1400 TON COMBINED CAPACITY, BLISS #2 ET-10 TRIPLE ACTION TOGGLE, 650 Ton, 39" stroke, 75" shut height of plunger, 400 Ton, 28" stroke, 72" shut height of blankholder, 350 Ton, 12" stroke of lower ram, 62" x 86" bed area.

525 TON, BLISS #410A DOUBLE ACTION TOGGLE, 25" stroke, 62" shut height of plunger, 17" stroke, 60" shut height of blankholder, 60 x 84 bed area.

255 TON, TOLEDO #96-D DOUBLE CRANK, STRAIGHT SIDE, 6" stroke, 30" shut height, 51 x 87" bed area.

255 TON, #8-E BLISS DOUBLE CRANK, STRAIGHT SIDE, 8" stroke, 32" shut height, 42 x 108" bed area.

180 TON, #70-D CLEVELAND DOUBLE CRANK, STRAIGHT SIDE, 18" stroke, 32" shut height, 40 x 84" bed area.

125 TON, TOLEDO #S-56 TWIN TYPE O.B.I. PRESSES ON S. S. BASE, 3" stroke, 25 x 25" bed area, 12½" shut height.

88 TON, TOLEDO #92½ DOUBLE CRANK, GAP FRAME, 8" stroke, 34 x 66" bed area, 20" shut height.

88 TON, BLISS #4D DOUBLE CRANK, GAP FRAME, 2¼" stroke, 38 x 53½" bed area, 9¼" shut height.

87 TON, BLISS #4½ STRAIGHT SIDE, 4½" stroke, 21 x 27 bed area, 14½" shut height.

75 TON, WELLS DOUBLE CRANK GAP FRAME, 2" stroke, 20 x 80" bed area, 11⅛" shut height.

60 TON, TOLEDO, #203-E DOUBLE CRANK GAP FRAME, 4" stroke, 13 x 55½" bed area, 16" shut height.

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Cabooses, Eight Wheel, Cupola Type
Flats, 40-and 50-Ton, Steel Underframe, 40'0"
Gondolas, Composite, 40-Ton Capacity
Gondolas, Composite or All Steel, 50-Ton and 70-Ton
Hoppers, Covered, All-Steel, 70-Ton
Hoppers, Twin, All-Steel, 50-Ton, Cross Dump
Hoppers, All-Steel, 70-ton, Cross Dump
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Tank, 8,000-Gallon, Coiled and Non-Coiled

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1500 H.P., 120-Ton, Type 0-4-4-0

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For Cleveland District, Working from local stock. Prefer man with Cleveland following. Guaranteed minimum against generous commission. Reply by letter giving age, qualifications, references to:

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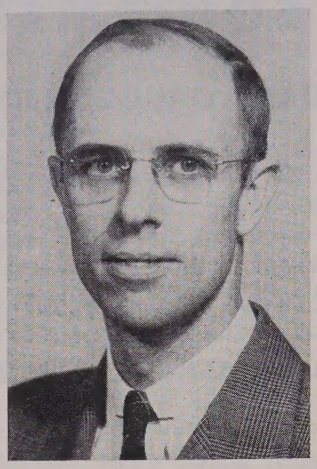
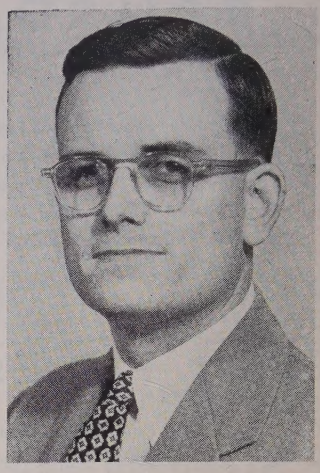


VANCE BELL



JOHN S. MORGAN

STEEL Appoints Bell, Morgan Assistant Managing Editors

Vance Bell and John S. Morgan were appointed assistant managing editors as part of STEEL's program to further improve and expand its services editorially to its readers. As STEEL's associate editors for the last several years, both have been actively engaged in reporting and analyzing developments of significance to metalworking executives.

Toledo Porcelain To Build Plant

Toledo Porcelain Enamel Products Co., Toledo, O., which recently became a wholly-owned subsidiary of Bettinger Corp., Waltham, Mass., will develop a complete high-temperature ceramic department to coat high-alloy metals for airplane engine "hot" parts. The new ceramic coating plant in Toledo will duplicate Bettinger's special plant for that purpose in Waltham. While production capacity will be greatly increased for both firms, there will be no change in management personnel or in present production organization at Toledo Porcelain.

West Bend Aluminum Expands

West Bend Aluminum Co., West Bend, Wis., is constructing an addition to its plant to provide more space for production of civilian goods. When the building is completed next spring, operations will be rearranged to provide the firm with floor space equal to the amount being used at its plants in that city and in Hartford, Wis., for defense work.

Cunningham Buys Pittsburgh Plant

M. E. Cunningham Co., Pittsburgh, manufacturer of safety steel stamps, dies and other marking tools, acquired a new plant in that city. The new plant will have more than double the working space available in the previous location. In moving into the new plant, Cunningham acquired additional metalworking a heat-treating equipment to han increased production.

Monroe Scrap Builds Warehouses

Luria Engineering Co., Bethleh Pa., is erecting two steel warehou with an aggregate floor area 11,000 square feet, for Monroe Sc Material Co., Monroe, Mich.

Pacific Airmotive Expands Facilit

Increased manufacturing facili were acquired by Pacific Airmo Corp., through leasing of 5000 squ feet of floor space at 1953 Onta Burbank, Calif. Plans call for an crease in production of electri mechanical actuators of 400 per within a year. Bellows, X-ray pump sections of the Manufactur Division also were moved to the location from 2940 N. Hollyw Way.

AiResearch Moves Department

Engineering department of A search Mfg. Co., a division of rett Corp., Los Angeles, was m to enlarge quarters in a building 9225 Aviation Blvd., that city.

Harnischfeger Corp. Names Agen

Harnischfeger Corp., Milwau appointed General Welding Eq ment Co., St. Louis, as its distrib in that area to handle its line of welders, electrodes and welding tioners.